

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

IN THE MATTER OF:)CASE BER 2007-07-AQ
SOUTHERN MONTANA ELECTRIC)
GENERATION AND TRANSMISSION)
COOPERATIVE - HIGHWOOD)
GENERATING STATION)
AIR QUALITY PERMIT NO. 3423-00)

TRANSCRIPT OF PROCEEDINGS - VOLUME III

Heard at Room 111 of the Metcalf Building
1520 East Sixth Avenue
Helena, Montana
January 23, 2008
8:00 a.m.

BEFORE CHAIRMAN JOSEPH RUSSELL;
BOARD MEMBERS LARRY MIRES, HEIDI KAISER, GAYLE
SKUNKCAP, BILL ROSSBACH, ROBIN SHROPSHIRE,
and DON MARBLE

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17 MEIC Exhibit B	5	12
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18 MEIC Exhibit C	12	15
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1 Whereupon, the following proceedings were
2 had and testimony taken, to-wit:

3 * * * * *

4 CHAIRMAN RUSSELL: We are all in, and
5 we'll get started. I think you need to take the
6 stand again, Eric, and remember you've been sworn
7 in and you're under oath.

8 ERIC MERCHANT,
9 called as a witness herein, having been previously
10 sworn, was examined and testified as follows:

11

12 CROSS-EXAMINATION

13 BY MS. DILLEN:

14 Q. Good morning, Mr. Merchant?

15 A. Good morning.

16 (MEIC Exhibit B

17 was marked for identification)

18 Q. (By Ms. Dillen) Mr. Merchant, I've
19 handed you what's just been marked as MEIC Exhibit

20 B. Do you recognize this document?

21 A. (Examines document) Yes.

22 Q. This is an email that was in your files,
23 was it not?

24 A. Yes.

25 Q. With an attachment from a person named

1 Mark Story; is that correct?

2 A. The email was from Mark Story. I
3 believe the attachment was from Howard Gephardt.

4 MR. REICH: Does the Board have a copy
5 of this?

6 CHAIRMAN RUSSELL: No, we don't.

7 MS. DILLEN: (Provides document)

8 Q. (By Ms. Dillen) Mr. Merchant, this was
9 a document that was sent to you on behalf of the
10 National Forest, was it not?

11 A. Yes.

12 Q. And the National Forest Service is a
13 federal land manager under the PSD program; is
14 that correct?

15 A. That's correct.

16 Q. And by federal manager, I mean that
17 under the PSD program, federal officials
18 responsible for Class 1 areas such as wilderness
19 areas or national parks are responsible for
20 ensuring that no adverse impact occurs to a Class
21 1 area as a result of a PSD permit; is that right?

22 A. That's correct. They review proposed
23 sources, major new sources that may impact
24 national parks, or wilderness areas, etc., yes.

25 Q. So the National Forest Service in this

1 case was sending you comments on the draft SME
2 permit in their capacity as federal land managers
3 under the PSD program?

4 A. That's correct.

5 Q. Would you turn to page -- these numbers,
6 they're not numbered. If you go to the
7 attachment. And this is from a Howard Gephardt.
8 He was a consultant hired by the Forest Service
9 and the National Park service; is that right?

10 A. That's correct.

11 Q. And on the second page of this
12 attachment, if you go down to the third full
13 paragraph, you'll see a discussion of the PM10
14 BACT limit of .012; is that correct?

15 A. Yes.

16 Q. Could you read starting with, "A total
17 PM10 limit," please.

18 A. "A total PM10 limit (0.026 pounds per
19 million Btu) has been set based on the combined
20 filterable and condensible emissions, but does not
21 appear to be linked to BACT. Again, other plants
22 have lower PM10 BACT limits, with the lowest
23 listed in the RBLC at 0.010 pounds per million Btu
24 (Reliant Energy Seward Power). Also a recent CFB
25 permit for River Hill Project in Pennsylvania also

1 permitted PM10 emissions at 0.010 pounds per
2 million Btu. The HGS fact review does not even
3 consider any PM10 emissions lower than 0.012
4 pounds per million Btu, despite the appearance of
5 such emissions in the RBLC.

6 "Since other CFB plants have been
7 permitted at even lower filterable PM10 emission
8 rates, while using essentially the same emissions
9 control technology, these lower emission rates
10 should also be considered considered as BACT."

11 Q. Thank you. Now turning to the very
12 final page, where you'll see -- you can identify
13 it by the signature at the end "Howard."

14 A. Okay.

15 Q. If you'll just begin reading the first
16 two sentences, please.

17 A. "In addition, my review also suggests
18 that lower BACT emission limits may be feasible.
19 In particular, lower SO2 and PM10 emissions have
20 have been permitted elsewhere, and the
21 justification providing for dismissing those lower
22 BACT levels is inadequate."

23 Q. And you reviewed this letter in your
24 review of the SME permit application and your
25 finalization of the permit?

1 A. I reviewed these as comments on the
2 draft permit.

3 MS. DILLEN: I move that MEIC Exhibit B
4 be admitted into evidence.

5 CHAIRMAN RUSSELL: Is there a motion?

6 MR. ROSSBACH: So moved.

7 MR. REICH: Objection. Just as to --

8 CHAIRMAN RUSSELL: Let's go ahead and
9 get a second.

10 MR. MARBLE: Second.

11 MR. REICH: I object simply as to those
12 portions of the memo that have nothing to do with
13 PM10 or the issues in this case.

14 MR. RUSOFF: The Department has the same
15 comment. I don't have any objection to the
16 comments except they're irrelevant.

17 MS. SHROPSHIRE: What I understand, the
18 condensable BACT portion, condensable PM portion
19 was done by the Department using SO2 numbers?

20 THE WITNESS: No. The condensable
21 portion -- It turned out that the control that was
22 deemed BACT for SO2 was also BACT for the
23 precursors for condensable. The control
24 technology itself was also deemed BACT for
25 precursors to condensable PM10.

1 MS. SHROPSHIRE: Say that again.

2 THE WITNESS: I'll try to simplify that.

3 The same control technology that was deemed BACT,
4 the control technology itself for SO2 was also in
5 part deemed to be BACT for the precursors to
6 condensible PM10. So the same controls are being
7 used for SO2 as they are for condensible PM10
8 precursors.

9 MS. DILLEN: We have no objection to
10 limiting this evidence to the portions that I've
11 identified.

12 CHAIRMAN RUSSELL: Bill, will you amend
13 just to close --

14 MR. ROSSBACH: Sure.

15 CHAIRMAN RUSSELL: It's been amended to
16 reflect only that that's been basically read into
17 the record. Robin, do you concur?

18 MR. MARBLE: I don't concur. I don't
19 think we've had time to look at this and make sure
20 it's not relevant.

21 CHAIRMAN RUSSELL: That's why I just
22 changed it to the information that was read into
23 the record.

24 MR. ROSSBACH: Actually I'm not going to
25 amend my motion. I think the whole thing can go

1 in for completeness. Otherwise you can't
2 understand it.

3 MR. RUSOFF: I don't have any objection
4 to the whole document being included. There is a
5 section on cal puff modeling, and I guess my
6 comment was simply to indicate that if that's not
7 relevant to the issues before the Board, then that
8 shouldn't be considered in the Board's decision.

9 CHAIRMAN RUSSELL: I hope the Board
10 doesn't take that up in deliberations then.

11 MS. DILLEN: If I might address Mr.
12 Marble's concern. If we won't have this document
13 in the record for review later on, then the record
14 would not be complete.

15 MR. MARBLE: I want the whole record in.
16 That's my point. I'm just saying I don't want to
17 go through -- we don't enough time to review it,
18 and cut this out, and cut that out. We'll ignore
19 what is not relevant, I suppose.

20 CHAIRMAN RUSSELL: Okay?

21 MR. REICH: Yes.

22 CHAIRMAN RUSSELL: First motioned by
23 Bill and seconded by Don. All those in favor,
24 signify by saying aye.

25 (Response)

1 CHAIRMAN RUSSELL: Opposed.

2 (No response)

3 (MEIC Exhibit B

4 was received into evidence)

5 (MEIC Exhibit C

6 was marked for identification)

7 Q. (By Ms. Dillen) Mr. Merchant, you now
8 have in front of you what I've just had marked as
9 MEIC Exhibit C.

10 A. Yes, I do.

11 Q. Do you recognize this document?

12 A. (Examines document) Yes.

13 Q. This document was an email from your
14 files, was it not?

15 A. Yes.

16 Q. It has an attachment, does it not, a
17 memo from the National Park Service?

18 A. Yes, it does.

19 Q. And was this email sent to you from
20 Leanna Riley at the National Park Service?

21 A. Yes.

22 Q. Was she commenting to you in her
23 capacity as a federal land manager under the PSD
24 program?

25 A. She was.

1 Q. Could you turn to Page 2 of the attached
2 National Park Service memo, please.

3 A. (Complies)

4 Q. At the very bottom of the page, there is
5 an italicized PM colon. Could you read starting
6 there.

7 A. "MDEQ has proposed a baghouse at 0.012
8 pounds filterable PM10 per million Btu, and 0.014
9 pounds condensible PM10 per million Btu."

10 Q. Keep going.

11 A. "We acknowledge the MDEQ efforts to
12 lower the filterable limit from the 0.015 pounds
13 per million Btu rate proposed by SME, but even
14 lower limits on filterable PM10 are listed in the
15 attached table (Table 1). Table 1 contains two
16 permitted CFB boilers (and one proposed) with
17 lower limits on filterable PM10. MDEQ should show
18 why the Highwood facility cannot meet a similar
19 limit."

20 Q. Then turning to the next page, under the
21 heading "Conclusions," there are two bullet
22 points. The second bullet point begins with,
23 "Commending you for your BACT analysis," but
24 moving on to the sentence, I believe it's the
25 third sentence beginning "That said," could you

1 read that, please.

2 A. The second bullet point?

3 Q. Yes.

4 A. "That said, lower BACT emission limits
5 for PM10 may be feasible by improving the
6 efficiency of the chosen control technology.
7 Lower PM10 emissions have been permitted
8 elsewhere, and the justification provided for
9 dismissing the lower BACT level is inadequate."

10 Q. Thank you. And you had a chance to
11 review these comments before finalizing the SME
12 permit that's at issue in this case?

13 A. Yes.

14 MS. DILLEN: I would move these
15 documents also be admitted into evidence.

16 CHAIRMAN RUSSELL: Is there a motion?

17 MR. ROSSBACH: So moved.

18 MS. SHROPSHIRE: Second.

19 CHAIRMAN RUSSELL: It's been moved by
20 Bill and seconded by Robin.

21 MR. REICH: I have the same objection as
22 to the irrelevancy of the portions that were not
23 read into the record.

24 MR. RUSOFF: I have the same comment.
25 There are a couple other issues that are discussed

1 in the letter that aren't relevant.

2 CHAIRMAN RUSSELL: Are we sticking to
3 putting the whole document in?

4 MR. ROSSBACH: Put the whole document
5 in.

6 MR. MIRES: The first part that you had
7 read, could you identify that again for me.

8 MS. DILLEN: Sure. It was Page 2 at the
9 bottom of the page. It was the section relating
10 to PM in italics.

11 CHAIRMAN RUSSELL: It's been moved and
12 seconded. All those in favor, signify by saying
13 aye.

14 (Response)

15 CHAIRMAN RUSSELL: Opposed.

16 (No response)

17 (MEIC Exhibit C
18 was received into evidence)

19 (MEIC Exhibit D
20 was marked for identification)

21 Q. (By Ms. Dillen) Mr. Merchant, do you
22 recognize the exhibit before you which I've just
23 had marked as MEIC Exhibit D?

24 A. Yes, I do.

25 Q. Is this a letter from you to Mark Story

1 at the Gallatin National Forest?

2 A. Yes.

3 Q. Is this a letter in response to the
4 comments that they had just sent you that we just
5 read?

6 A. Yes.

7 Q. Is it fair to say that your response to
8 Mr. Story was that you did not need to look at the
9 Lowest Achievable Emission Rate because -- excuse
10 me -- that you didn't need to look at lower
11 facilities because this was BACT, and not the
12 Lowest Achievable Emission Rate standard that
13 would apply in nonattainment areas?

14 A. I think that I had more comprehensive
15 answer than that for him, but in general, that's
16 my statement, yes.

17 Q. Does this document provide any analysis
18 of why the emission limits the National Forest
19 Service and Park Service had identified to you
20 were not achievable at the SME facility?

21 A. It does not discuss that, no.

22 Q. And is there anywhere in the permit
23 analysis in the final permit that responds to the
24 concerns outlined by Forest Service and National
25 Park Service?

1 A. No.

2 Q. In your responses to SME letting them
3 know that their permit had been finalized, did you
4 provide any analysis as to why you decided that
5 the .012 limit was acceptable notwithstanding
6 lower limits elsewhere?

7 A. I'm sorry. Could you ask that again one
8 more time?

9 Q. Sure. Is there anywhere else in the
10 record in your correspondence with SME or others
11 where you outlined why it was your conclusion that
12 the lower limits that had been identified by the
13 Park Service and the National Forest Service could
14 not be achieved at SME?

15 A. No.

16 MS. DILLEN: We would move this letter
17 from Mr. Merchant be admitted to evidence.

18 CHAIRMAN RUSSELL: We need to change the
19 exhibit number because you do have an Exhibit D.
20 Let's change it to C-1.

21 MS. DILLEN: Sure.

22 CHAIRMAN RUSSELL: Do you have another
23 blank space in there?

24 MS. DILLEN: I think "E" would probably
25 work.

1 CHAIRMAN RUSSELL: How about we call it
2 "E".

3 (MEIC Exhibit E
4 was marked for identification)

5 CHAIRMAN RUSSELL: Do I have a motion to
6 move MEIC Exhibit E into evidence?

7 MR. ROSSBACH: So moved.

8 MS. SHROPSHIRE: Second.

9 CHAIRMAN RUSSELL: It's been moved and
10 seconded. Any further discussion?

11 (No response)

12 CHAIRMAN RUSSELL: Seeing none, all
13 those in favor, signify by saying aye.

14 (Response)

15 CHAIRMAN RUSSELL: Opposed.

16 (No response)

17 (MEIC Exhibit E
18 was received into evidence)

19 (MEIC Exhibit H
20 was marked for identification)

21 Q. (By Ms. Dillen) Mr. Merchant, you have
22 before you what I've just had marked as MEIC
23 Exhibit H. Do you recognize this document?

24 A. Yes.

25 Q. Did you author it?

1 A. I did.

2 Q. And the date of this document is October
3 3, 2005; is that correct?

4 A. Yes.

5 Q. And you were responding to the draft
6 application that you had received from SME at that
7 time?

8 A. That's correct.

9 Q. And you were identifying concerns that
10 you had identified in the draft application; is
11 that correct?

12 A. Yes.

13 Q. Could you turn to Page 2 of your memo at
14 Point No. 5.

15 A. (Complies)

16 Q. This is entitled, "BACT for CFB Boiler
17 Sulphuric Acid Mist and Hydrofluoric Acid
18 Emissions;" is that right?

19 A. That's correct.

20 Q. Is it true that sulphuric acid mist and
21 hydrofluoric acid emissions are part of the
22 condensible PM10 emissions that you set a BACT
23 limit for?

24 A. That's correct.

25 Q. Could you read the sentence immediately

1 following the title beginning, "The Department,"
2 and move through that entire bullet point five.

3 A. "The Department will require that a more
4 thorough BACT analysis (see Item 2 above) be
5 conduct for H₂SO₄ and HF emissions from CFB
6 boiler. There are at least seven facilities with
7 better H₂SO₄ emission limits than the 0.0054
8 pounds per million Btu, and at least 13 facilities
9 with better HF emission limits than 0.0022 pounds
10 per million Btu. The differences may be due to
11 differing reported averaging times in the RBL. The
12 counteraction of other pollutants (i.e.,
13 relationship between H₂SO₄ and SO₂, etc.)
14 However, this is not apparent in the draft
15 application."

16 Q. Is it true that the emission limits of
17 .0054 pounds per million Btu is still in place for
18 H₂SO₄?

19 A. Yes.

20 Q. Is it true that the emission limits of
21 0.0022 pounds per million Btu is still in place
22 for your hydrofluoric acid emissions limit?

23 A. I believe so. I'm not certain without
24 looking at the permit.

25 Q. If you'd like to take a look, you

1 certainly can. I believe that's in seven.

2 A. (Examines document) That's incorrect.

3 The emission limit for hydrofluoric acid was set

4 at 0.0017 rather than 0.0022.

5 Q. For hydrofluoric?

6 A. For hydrofluoric acid emissions, yes.

7 Q. And you were essentially asking for more

8 data from SME in relation to these condensible

9 emissions limits; is that correct?

10 A. That's correct.

11 Q. And is that further data evidenced

12 anywhere in their final permit application?

13 A. I assume that its in their response to

14 my comments or in their -- it probably is in their

15 filed application rather, because these were

16 comments on the draft application.

17 Q. Correct. But are you aware in the final

18 application where I might find a justification for

19 the permit limits that were eventually set for the

20 sulphuric acid mist and hydrochloric acid

21 emissions?

22 A. I believe those would be found in

23 Section 5 of the application.

24 Q. Do you have those with you today?

25 A. Can you help me out with where the

1 application is?

2 Q. The application is at four. We have
3 excerpts. If you look at Page 40 -- excuse me --
4 five -- If you look at acid gases, it's 548, the
5 sulphuric acid mist.

6 A. 549.

7 Q. Would you like to point me to any
8 sentence there which satisfied you as to why it
9 was appropriate to set a limit that was far below
10 the permitted limits for other facilities that you
11 had identified?

12 A. I believe my justification was based on
13 the information here that this is an achievable
14 emission rate considering the controls that were
15 deemed BACT for this boiler, firing this coal, for
16 this project.

17 Q. But you can't point me to a particular
18 sentence that goes beyond what SME had presented
19 to you before on the draft application that
20 satisfied you as to why it was all right to set a
21 limit that was an average of permitted limits
22 around the country, rather than closer to the top
23 of the list?

24 A. My only response to that would be that
25 -- if we want to go through the BACT process again

1 real quickly. BACT isn't -- you don't start with
2 a lowest limit that is out there and being
3 achieved, which we discussed as LAER. LAER does
4 not apply to this facility, because they're
5 proposing operations in an attainment area for all
6 pollutants. BACT is the process.

7 Again, what we would do would be to
8 evaluate the available controls for the different
9 pollutants subject to BACT; eliminate the
10 technically infeasible control options; rank those
11 control options that are remaining -- which is
12 what the application does -- and then we determine
13 other -- we evaluate other factors, such as
14 environmental, economic concerns; determine what
15 is the control technology that constitutes BACT.

16 In this case, the top control technology
17 for acid gases was a co-benefit control provided
18 by the controls already deemed BACT for SO2 and
19 filterable PM. Therefore, we didn't go past --
20 The top controls were chosen and already in place.
21 We didn't go past and do the economic analysis
22 associated with the other controls because the top
23 control was already in place.

24 Q. But it's fair to say that you yourself,
25 when you reviewed the draft application, were

1 concerned that this limit was not comparable to
2 lower set emissions around the country?

3 A. That is fair to say. That is always a
4 consideration, yes.

5 Q. With respect to the condensible emission
6 rates and best available technologies for those
7 that you've just been discussing, perhaps we can
8 turn in the permit analysis. I believe the table
9 ranking technologies is provided at Page 40 of the
10 permit at Tab 7.

11 A. Of the permit analysis, I believe.

12 Q. Of the permit analysis. Excuse me.

13 MR. REICH: Counsel, could you repeat
14 the page?

15 MS. DILLEN: Sure. Page 40. And if the
16 Board is not with me, this is the table that we
17 had looked at yesterday, Page 40 of the permit
18 analysis, rather than the permit, which begins at
19 Tab 7.

20 Q. (By Ms. Dillen) In those rankings, is
21 it correct that they're all either 90 percent, 80
22 percent, 90 percent, 80 percent?

23 A. That is correct.

24 Q. And for filterables, isn't it the case
25 that you were able to identify more exact

1 efficiency rates of 99.85, for instance?

2 A. Yes.

3 Q. And here you had more sort of ballpark
4 numbers; is that correct?

5 A. That is correct.

6 Q. Where is the information in this permit
7 application that justifies these estimated control
8 efficiencies? I don't believe it will be in
9 what's been provided by the parties. If you could
10 just point it to me, because we've never seen it.
11 Could you just tell me if you've ever seen it, if
12 it exists.

13 A. The question was: Where is the
14 justification for them?

15 Q. Yes. Where are the numbers that show
16 exactly how efficient each control technology is,
17 how it ranks as opposed to other technologies?
18 Did you ever see any of that? Did you ever see
19 anything from a vendor in that regard?

20 A. This table came out of the application
21 that I have provided in my summary. And getting
22 back into what I discussed a bit yesterday on
23 direct, on some level, obviously we -- I rely on
24 the information that is in the application to be
25 true and accurate as certified information. The

1 applicant provides that information specific to
2 the project that they're proposing. I rely on
3 that application.

4 Q. As general matter, just in your
5 experience, in your nine years of experience as a
6 permitter, is it often the case that a wet ESP is
7 used to collect condensible particulates?

8 A. That is not my experience.

9 Q. Why is that?

10 A. Well, let me rephrase. A wet ESP is one
11 possibility for collecting filterable and
12 condensible PM10. This is only the second permit
13 that I'm aware of that the State of Montana has
14 issued that includes a condensible PM10 emission
15 limit, so it is something that's relatively new to
16 me. However, again, the information that was in
17 the application is based on the project
18 specifically being proposed, and I relied on that
19 information provided in the application to conduct
20 my analysis.

21 Q. Isn't it fair to say that wet ESP's are
22 generally regarded as a very effective way to
23 control condensible particulate?

24 A. They are one of the top two controls for
25 controlling particulate in general.

1 Q. You testified yesterday that with
2 respect to fabric filters, they're quite good at
3 capturing filterable emissions to very low micron
4 size; is that right?

5 A. What are?

6 Q. Fabric filters.

7 A. Fabric filters, yes.

8 Q. And fabric filters, though, you can have
9 a problem where the gases that are condensibles do
10 pass through them; is that right?

11 A. That's correct. However, I will also
12 note that the fabric filter provides co-benefit
13 control for SO₂, and H₂SO₄, HCL, HF; whereas a wet
14 ESP does not have that same capability.

15 Q. And is that just a function of the fact
16 that those emissions are staying in the baghouse
17 long enough perhaps to attach to other particles,
18 so that they become solid?

19 A. It's function of the filter cake
20 build-up, yes.

21 Q. So even with a fabric filter, you would
22 have gaseous emissions that would escape and
23 remain condensibles; is that correct?

24 A. They would remain precursors to
25 condensibles, correct.

1 Q. And with respect to those condensibles
2 that escape a fabric filter baghouse, an ESP would
3 be one control that would be -- that you might
4 consider for collecting those condensibles that
5 had escaped through the fabric filter; is that
6 right?

7 A. I believe that we did consider an ESP as
8 a potential condensible PM10 control.

9 Q. A wet ESP following the fabric filter?

10 A. No, that was never considered.

11 Q. You testified yesterday that an ESP
12 after a fabric filter would just be like a
13 baghouse after a baghouse. What I'm asking you
14 is: If a fabric filter allows some condensibles
15 to pass through it, and you placed an ESP at that
16 point to collect those condensibles, couldn't you
17 do better that way than you would alone with
18 simply a fabric filter?

19 A. Let me explain my answer yesterday to
20 that question, a fabric filter following a fabric
21 filter. The analysis that we conducted for PM2.5
22 was based on a surrogate analysis of PM10. The
23 available information, the real information that
24 we have out there to analyze emissions, showed us
25 that for controlling PM10, the top control

1 technology is a fabric filter baghouse. At that
2 point, anything that's getting through that
3 baghouse is going to be much lower than the
4 pre-baghouse control.

5 And therefore, a general statement I'll
6 make at this point is that that would not be cost
7 effective to require another redundant control
8 after the fact.

9 Q. But you never considered it?

10 A. I did not consider that.

11 Q. And just to be clear, on this table that
12 you've included from permit application on Page 40
13 of your permit analysis, these were just numbers
14 that SME had given you; is that correct?

15 A. That's correct.

16 Q. Going back for a moment, you've
17 illuminated for us the difference between LAER and
18 BACT, and I want to make sure everyone
19 understands. LAER is the standard, the Lowest
20 Achievable Emissions Rate standard that's
21 applicable in areas of nonattainment with National
22 Ambient Air Quality Standards; is that right?

23 A. For a specific pollutant, yes.

24 Q. Those areas are not Class 1 areas,
25 correct, nonattainment areas?

1 A. I guess there could be a Class 1 area
2 that would be a nonattainment, but that would be
3 unlikely.

4 Q. So generally speaking, the Park Service
5 and the Forest Service, as federal land managers
6 under the PSD program, get involved when a Class 1
7 area is implicated; is that right?

8 A. Yes.

9 Q. And so their purpose in commenting on
10 this permit would be fully within the confines of
11 the PSD program to which BACT is a part, correct?

12 A. That's correct.

13 Q. LAER emission rates have nothing to do
14 with the PSD program; is that right?

15 A. That's correct.

16 Q. Is it fair to say that the Park Service
17 and the National Forest Service probably didn't
18 have LAER in mind when they were commenting on
19 this PSD permit?

20 A. That's fair to say.

21 Q. Just for the record, Mr. Merchant, I
22 want to confirm that the Department never
23 considered membrane bags, and the additional
24 efficiency that they might add if they were used,
25 in this permitting process?

1 A. No, they did not.

2 Q. Finally, is it your position that the
3 Department has authority to prove alternate test
4 methods?

5 MR. RUSOFF: Object to the extent that
6 the question calls for a legal conclusion. I
7 don't have any objection with reference to
8 specific provisions of rules.

9 Q. (By Ms. Dillen) Have you taken the
10 position that the rules would allow the Department
11 to approve an alternative test method with respect
12 to the SME plant?

13 A. Alternative test methods are -- Many of
14 the alternative test methods are actually approved
15 reference methods. I don't know if you're
16 referring to conditional test methods in this
17 case, rather than alternative. There is a big
18 difference between what you're saying. There are
19 alternative methods.

20 Q. I'm just asking you if it's your
21 position that you can approve an alternative test
22 method? Just first that question.

23 A. Alternative to what?

24 Q. Alternative to the test that is
25 specified in your protocols.

1 A. I'm not a compliance officer, so I don't
2 look at these issues in great deal. But I am
3 aware that there are -- the protocol specifies the
4 test method that is -- the referenced method,
5 approved method, that is generally used for
6 monitoring compliance with a given emission limit;
7 and then the protocol also describes alternative
8 methods that are available for monitoring
9 compliance. And so generally, yes, that's
10 something that the Department can do.

11 Q. So if there is a test that's not within
12 -- that's not listed among your variety of
13 protocols, is that a test that you would consider,
14 could consider approving?

15 A. In my experience, that's not something
16 that we do. Generally the Montana Source Test
17 Protocol and Procedures Manual outlines how the
18 Department will evaluate compliance with an
19 applicable emission limit. And I'm not aware of
20 any circumstance where we've approved a
21 conditional test method, but that may have been
22 done in the past. I'm not certain.

23 Q. So it's not your position that it
24 wouldn't be prohibited or impossible?

25 A. That's not my position, no. It's

1 possible.

2 Q. One final question. Mr. Merchant, was
3 it your position in this permitting process that
4 SME should follow the top down BACT procedures?

5 A. The top down procedure is a method that
6 we generally think is a good method to use. It's
7 not required. I don't know that I would state
8 that they were required to or should have used it.
9 They did use it.

10 Q. Your position is that they did use it?

11 A. For what pollutant are we talking about?
12 Are we talking about in general?

13 Q. Yes.

14 A. Yes.

15 MS. DILLEN: No further questions.

16 CHAIRMAN RUSSELL: Redirect.

17 MR. REICH: Mr. Chair, if I might, I do
18 have a couple of cross questions. If I could just
19 wait to see if Mr. Rusoff covers those.

20 CHAIRMAN RUSSELL: That would be great.

21 MR. REICH: Otherwise I would be --

22

23

24

25

1 REDIRECT EXAMINATION

2 BY MR. RUSOFF:

3 Q. Mr. Merchant, Ms. Dillen asked you a
4 series of questions regarding some comments that
5 the Department received from the National Forest
6 Service and the National Park Service regarding
7 the draft permit for the Highwood Generation
8 station. Do you remember that series of
9 questions?

10 A. I do.

11 Q. From your experience as an air permitter
12 for approximately nine years, do you know whether
13 either the Forest Service or the National Park
14 Service is responsible for issuing air quality
15 permits?

16 A. They are not.

17 Q. Do you know whether the Park Service or
18 the National Park Service makes BACT
19 determinations then?

20 A. Since the BACT determination is part of
21 an air quality permit application, they do not.

22 Q. Ms. Dillen had you read a couple of
23 provisions of the comments that the Department
24 received from the Forest Service. Do you agree
25 with the comment of the Forest Service that the

1 total PM10 limit of .026 does not appear to be
2 linked to BACT?

3 A. I disagree with that.

4 Q. What's the basis for your disagreement
5 with that comment?

6 A. My disagreement is because the
7 application provided a BACT analysis for the
8 condensible as well as the filterable PM10
9 emissions; and I reviewed that BACT analysis and
10 determination, and deemed that number 0.026 to be
11 BACT through the BACT process.

12 Q. Do you agree with the statement that Ms.
13 Dillen had you read that the HGS BACT review does
14 not even consider any PM10 emissions lower than
15 .012 pounds per million Btu?

16 A. I disagree with that.

17 Q. In the Department's permit analysis, is
18 there acknowledgment of the existence of lower
19 PM10 emission limits from a couple of facilities
20 in the country?

21 A. Yes. The application, as well as my
22 summary -- Well, my summary references the
23 application, which includes lower limits for at
24 least two facilities for PM10, and I think one
25 facility for condensible. I should say total --

1 no, it is condensable in the summary.

2 Q. Ms. Dillen had you read some provisions
3 from the letter received by the Department from
4 the National Park Service, and turning to Page 3
5 of that letter, if you would.

6 A. Could you reference the exhibit?

7 Q. MEIC-C.

8 CHAIRMAN RUSSELL: Before we go any
9 further, we never moved to put this exhibit in.
10 We never got a --

11 MR. REICH: No.

12 CHAIRMAN RUSSELL: The last one I've
13 been putting --

14 MS. DILLEN: I'm sorry. I would move to
15 have that admitted into evidence, please.

16 CHAIRMAN RUSSELL: Did you find one that
17 was open?

18 MS. DILLEN: I believe that was "H" was
19 open, right?

20 MR. MIRES: One is Exhibit H.

21 CHAIRMAN RUSSELL: Let's move it to be
22 admitted as Exhibit H. Is there a --

23 MR. MARBLE: Second.

24 MR. LIVERS: It was moved.

25 MR. MIRES: It was.

1 MS. SHROPSHIRE: So moved.

2 CHAIRMAN RUSSELL: Did we vote on it?

3 MS. SHROPSHIRE: Just now.

4 MR. MARBLE: Second.

5 CHAIRMAN RUSSELL: It's been moved and
6 seconded by Robin.

7 MR. REICH: Same objection as to the
8 relevance of any of the portions of this memo that
9 do not deal with PM10 or PM10 issues. I further
10 have an objection as to relevance altogether,
11 since this is a comment on draft application, not
12 a comment on the final application.

13 CHAIRMAN RUSSELL: So noted.

14 MS. DILLEN: I think Mr. Merchant's
15 concerns about the permit application, many
16 provisions of which remain unchanged, are clearly
17 relevant to these proceedings.

18 CHAIRMAN RUSSELL: It's been moved and
19 seconded. All those in favor, signify by saying
20 aye.

21 (Response)

22 CHAIRMAN RUSSELL: Opposed.

23 (No response)

24 (MEIC Exhibit H
25 was received into evidence)

1 Q. (By Mr. Rusoff) Mr. Merchant, again,
2 referring back to the comments from the National
3 Park Service that Ms. Dillen had you read a couple
4 provisions from, which has been admitted as MEIC
5 Exhibit C, do you recall whether the Park Service
6 made any comment concerning the emission control
7 technologies that the Department proposed as BACT
8 for particulate matter in the draft permit? And I
9 can point you to the specific provisions of that,
10 if you need me to.

11 A. They did not.

12 Q. Would you take a look at Page 3 of that
13 letter MEIC-C. Do you see the caption "IGCC"?

14 A. Yes.

15 Q. Could you take a look at the paragraph
16 immediately preceding that caption. Does that
17 refresh your recollection?

18 A. Yes, it does.

19 Q. I'll repeat the question. Is there any
20 statement in that paragraph concerning the
21 emission control technologies proposed by the
22 Department as BACT for particulate for the HGS?

23 A. Yes.

24 Q. What was the Park Service's comment?

25 A. The Park Service -- "We agree that the

1 proposed emission control technologies are the
2 best available."

3 Q. Turning to Page 4 of that same document
4 in the conclusion section. One of the provisions
5 that Ms. Dillen did not refer you to, at the
6 second bullet, would you please read the first
7 sentence of the second bullet under "Conclusions"
8 that begins with the word "Overall."

9 A. "Overall, MDEQ's BACT analysis is among
10 the best we have seen."

11 Q. Mr. Merchant, you were asked a question
12 regarding whether you looked at lower limits in
13 your BACT analysis; do you recall that?

14 A. Yes.

15 Q. And again to clarify, did you consider
16 the lower limits that you were aware of when you
17 reviewed SME's BACT analysis for particulate
18 matter?

19 A. Yes, I did. In the context of the BACT
20 process, I reviewed the lower limits that were
21 there as appropriate through the process.

22 Q. And anywhere in your responses to the
23 Forest Service and Park Service's comments did you
24 say that you don't have to look at lower emission
25 limits?

1 A. I don't believe that I did that, no.

2 Q. You had several questions from Ms.

3 Dillen regarding the limits for H₂SO₄ and HF. How
4 did you determine the ultimate BACT limits for
5 those two constituents of condensible PM₁₀?

6 A. Through the BACT process, those limits
7 are based on the control technologies deemed BACT
8 for those pollutants.

9 Q. And were those limits based upon your
10 determination that the control technologies being
11 required were the top control technologies?

12 A. Yes.

13 Q. And were those emission limits based
14 upon the lowest emission limits that you
15 determined were achievable based on those control
16 technologies?

17 A. Yes, for this project.

18 Q. And were those control technologies
19 already being required by the Department under its
20 BACT analysis for sulphur dioxide and filterable
21 particulate matter?

22 A. Yes. The top control technologies
23 deemed BACT for SO₂ and filterable PM₁₀ were also
24 the top technologies for acid gases, H₂SO₄.

25 Q. In your nine years of experience as an

1 air quality permitter, if a wet ESP wasn't chosen
2 as BACT for sulphur dioxide, or filterable
3 particulate matter, or some other pollutant being
4 analyzed, would it ever be chosen as BACT as an
5 additional control device after what has already
6 been determined the top control?

7 A. BACT is pollutant specific, so it could
8 be. However, we determined that -- Through the
9 analysis, I determined that the top control
10 technology was not a wet ESP, rather for acid
11 gases, it was a combination of dry flue gases,
12 desulphurization unit, followed by a fabric filter
13 baghouse, which were already in place as BACT
14 determinations for S2 and filterable PM10
15 respectively.

16 Q. Ms. Dillen asked you several questions
17 about the estimated control efficiencies in the
18 permit analysis on Page 40 of the permit analysis
19 for condensible PM10. Do you recall those
20 questions?

21 A. Yes.

22 Q. Did you research control efficiencies
23 for condensible particulate in your review of
24 SME's application?

25 A. Yes.

1 Q. And generally what did you find in terms
2 of the number of condensible emission limits being
3 set around the country?

4 A. (No response)

5 Q. And I can rephrase that if it's too
6 general.

7 A. I would like that.

8 Q. I apologize. I'll withdraw the
9 question. Did you find limits characterized as
10 condensible particulate limits in your research
11 that you did for SME's application?

12 A. Yes.

13 Q. In your research, did you find any
14 difficulties in determining how those limits had
15 been set?

16 A. Yes.

17 Q. What were those difficulties?

18 A. In my research, I found that there is a
19 lot of inconsistencies in what you see for permits
20 around the country for condensible limits. I'm
21 not certain. I was unable to tell in many cases
22 whether or not that was actually a filterable
23 limit only, when it was applied as a filterable
24 plus condensible limit.

25 And my reasoning for that is because

1 some of them were very low, whereas it appeared to
2 me that the filterable limit itself was the only
3 limit that was being applied there, because
4 essentially there would be -- after the filterable
5 part, a limit of, for example, 0.015. It would be
6 hard for me to imagine that that was filterable
7 plus condensible, when the filterable limit itself
8 is probably right around that range.

9 Q. And I believe you just testified that
10 setting emission limits for condensible PM10 is a
11 fairly new process for the Department; was that
12 your testimony?

13 A. To the best of my knowledge, this is the
14 second permit that includes a condensible PM10
15 limit.

16 Q. Do you know from your research whether
17 EPA has any policies concerning including
18 condensible emission limits in permits at this
19 time?

20 A. Yes. What EPA has stated -- I have been
21 involved in a meeting where EPA stated that at
22 this time, until technical problems associated
23 with evaluating compliance with condensible limits
24 are solved, that EPA is recommending that
25 condensible permit limits not be included in

1 permits.

2 Q. How recent was that discussion?

3 A. That discussion was sometime after
4 issuance, or during the process of -- after
5 issuance of the draft permit, and potentially
6 prior to the final permit. But I'm not certain.
7 It may have been after the final permit was
8 issued.

9 Q. When was the final permit issued?

10 A. The final permit was issued in May of
11 last year.

12 MR. SKUNKCAP: Can you repeat that? EPA
13 has recommended what?

14 THE WITNESS: EPA, in a meeting that I
15 was involved in with EPA with the source testing
16 expert for EPA, it was stated that until problems
17 are resolved with methodology for monitoring
18 compliance with condensible PM10 limits, or
19 condensible PM limits, EPA is recommending that
20 condensible limits not be included in the permits.

21 MR. SKUNKCAP: Thank you.

22 Q. (By Mr. Rusoff) So is it your
23 understanding from that discussion that EPA would
24 not approve the Department omitting a condensible
25 limit altogether from HGS permit?

1 MS. DILLEN: I have to object. This
2 seems to me that you're testifying to -- This is
3 hearsay from an EPA official. We have no idea who
4 he is. There is no evidence of this in record.

5 CHAIRMAN RUSSELL: We don't have a
6 record of this document.

7 MR. REICH: Yes, it's Exhibit 6, and I
8 can point you to the specific page.

9 CHAIRMAN RUSSELL: I think that would be
10 appropriate.

11 MR. REICH: This is the Joint Exhibit 6,
12 which is the Federal Register dated April 25th --

13 MS. DILLEN: My understanding is that
14 Mr. Merchant is testifying as to a meeting.

15 MR. REICH: May I finish? April 25th,
16 2007. It's Page 20652. The pages are at the top
17 there. And it's the second column, second column
18 about halfway down, second paragraph. I can read
19 the relevant language, if you would like.

20 CHAIRMAN RUSSELL: Why don't you go
21 ahead and do that.

22 MR. MIREs: Could you reference the page
23 again.

24 MR. REICH: Yes. It's 20652 of that
25 Federal Register. It's about three, four pages

1 into the document. The pages are at the top
2 left-hand.

3 MR. MIRES: 206 --

4 MR. REICH: 20652. Have you located the
5 page?

6 MR. MIRES: Yes.

7 MR. REICH: If you go to the second
8 column, the second paragraph begins, "With respect
9 to developing enforceable emission limits." If you
10 go down about halfway into that paragraph, there
11 is a sentence that begins "In response." I'll
12 just read that into the record.

13 "In response, we have decided to provide
14 a transition period for developing emission limits
15 in regulations for condensable PM2.5. During this
16 transition period, we will provide technical
17 support to states as requested establishing
18 effective PM2.5 emission limits and corresponding
19 emission testing requirements." And there is
20 another provision I need to --

21 CHAIRMAN RUSSELL: I hope there is
22 another one, because this does not support what
23 Eric just told us.

24 MS. DILLEN: What Mr. Merchant has been
25 testifying about, as I understand, is a meeting

1 that I've never heard anything about. This is
2 hearsay as to what EPA officials have said. The
3 Federal Register document that Mr. Reich is citing
4 has nothing to do with this.

5 MR. REICH: That's not true.

6 MS. DILLEN: I don't understand how this
7 document goes to this meeting, and how it would
8 help with a hearsay exception.

9 MR. REICH: Go to the third column.

10 MS. DILLEN: I object to Counsel
11 testifying as to what's in exhibits that are the
12 Board, and not addressing this objection as to
13 testimony regarding a meeting.

14 MR. REICH: Would the Board like in
15 point sentence that's relevant, or would you like
16 the witness to -- have the witness read it?

17 MR. RUSOFF: Mr. Chair, members of the
18 Board, we had a discussion of doing this
19 yesterday, so I'm going to ask what your
20 preference is. My understanding is that all of
21 the Board members have that document. I can have
22 the witness read the relevant provision, or we
23 could just leave it where it is with the Board
24 members looking at it.

25 CHAIRMAN RUSSELL: I think we need to

1 let the Board members look at the document,
2 because I don't think it substantiates what Eric
3 just said, although there is some language in
4 Column 3 that is pertinent for the Board's
5 deliberation. And if we don't let Abigail get up
6 after you redirect, I think that would be a shame,
7 so --

8 MR. RUSOFF: I'm fine with leaving it
9 right here. I don't need to ask the witness to
10 read it.

11 CHAIRMAN RUSSELL: You have objected.
12 Do I have a motion to sustain?

13 MR. MARBLE: To sustain the testimony
14 he's given about --

15 CHAIRMAN RUSSELL: The objection of the
16 hearsay evidence that Eric is has been giving.

17 MR. MARBLE: I move we sustain the
18 objection of MEIC.

19 CHAIRMAN RUSSELL: Is there a second?

20 MS. SHROPSHIRE: Second.

21 CHAIRMAN RUSSELL: It's been seconded by
22 Robin. All those in favor, signify by saying aye.

23 (Response)

24 CHAIRMAN RUSSELL: Opposed.

25 MR. ROSSBACH: Nay.

1 CHAIRMAN RUSSELL: Move on.

2 MR. RUSOFF: I'm done. I have no
3 further questions on redirect. Thank you very
4 much.

5 MR. REICH: I have just a couple
6 questions.

7 CHAIRMAN RUSSELL: All right. That
8 would be great.

9

10 RECROSS-EXAMINATION

11 BY MR. REICH:

12 Q. Good morning, Mr. Merchant. I just have
13 a couple of questions. You testified that you
14 hadn't considered membrane bags as part of your
15 independent permit analysis of the application of
16 SME; is that correct?

17 A. That's correct.

18 Q. And why was it that you didn't consider
19 membrane bags in evaluating the technology?

20 A. Because I'm not -- it was not addressed
21 in the application, and outside of the
22 application, and my independent review, and
23 experience with the Department, I'm not aware of
24 that control technology ever being, in my
25 experience, ever being utilized for this purpose.

1 Q. Have you handled more than one permit
2 application involving a power plant?

3 A. Yes.

4 Q. And in any of those applications that
5 you have reviewed for power plants, have you ever
6 seen a membrane filter bag technology proposed as
7 a control?

8 A. No.

9 Q. Are you aware whether a membrane filter
10 bag is available technology for controlling
11 filterable or condensible PM?

12 A. Only based on testimony in this case.
13 Other than that, I'm not aware of it.

14 Q. I'd direct you to the permit application
15 that I believe is in Tab 4. You talked about this
16 a little bit with Mr. Rusoff, so I won't -- I'm
17 just going to direct you to a couple of sections.

18 If you go to Page 5-47 of that permit
19 application, and it's Section 5.3.6.3 entitled,
20 "Step 3, Rank Control Options by Control
21 Efficiencies;" do you see that?

22 A. (Nods head)

23 Q. Could you start reading with the second
24 sentence and to the end of that paragraph.

25 MS. SHROPSHIRE: I'm sorry. Where are

1 we?

2 MR. REICH: This is Tab 4 of the book.

3 CHAIRMAN RUSSELL: What was the page?

4 MR. REICH: Page 5-47. And I was
5 directing him to Step 3, which is numbered
6 5.3.6.3.

7 A. The second sentence. Beginning with the
8 second sentence, "Limited data is available on
9 control efficiencies for sulphuric acid mist, acid
10 gases, trace metals, and condensible PM10
11 emissions, so the main boiler may not have the
12 same control efficiencies as outlined in Table
13 5.3-28, but the control options are assumed to be
14 ranked the same."

15 Q. (By Mr. Reich) I'll direct you to the
16 following page, Page 5-48, direct you to the
17 second sentence, and then just read that to the
18 end, beginning, "SME proposes."

19 A. "SME proposes as sulphuric acid mist
20 BACT a CFB boiler combusting PRB coal with dry FGD
21 followed by an FFB."

22 Q. And read it to the next sentence.

23 MR. MARBLE: Could you read that plain
24 English without all the acronyms.

25 THE WITNESS: I sure can. "SME,

1 Southern Montana Electric, propose as sulphuric
2 acid mist Best Available Control Technology a
3 circulate fluidized bed boiler combusting Powder
4 River Basin coal with dry flue gas
5 desulphurization, followed by a fabric filter
6 baghouse."

7 Going on, "Because this facility
8 (circulating fluidized bed boiler combusting
9 Powder River Basin coal with fly glue gas
10 desulphurization, followed by a fabric filter
11 baghouse, is 'a first of its kind.' The sulphuric
12 acid mist emission rate is the lowest emission
13 rate that could be guaranteed by a vendor
14 utilizing Powder River Basin coal in a circulating
15 fluidized bed with hydrated ash reinjection and a
16 fabric filter baghouse."

17 Q. (By Mr. Reich) That's fine. Could you
18 just explain that comment.

19 A. What that means is that the combination
20 of technology, fuel, and -- boiler technology,
21 fuel, and control technology is not something
22 that's been done before; and therefore, there is
23 going to be no information out there regarding its
24 performance specific to this pollutant, and other
25 pollutants as well, utilizing that technology with

1 this fuel source.

2 Q. Is it common practice for a applicant
3 that is proposing a particular technology to
4 obtain guarantees for that technology, in your
5 experience?

6 A. I would say that's common practice, yes.

7 Q. A final question: You had a chance to
8 look at Exhibit 6, the April 25, 2007
9 Environmental Protection Agency Federal Register
10 notice, have you not?

11 A. Yes.

12 Q. And isn't it true that that regulatory
13 notice provides that states do not have to put
14 condensable limits in their permits until year
15 2011?

16 A. Yes, it does.

17 MR. REICH: I have no further questions.

18 CHAIRMAN RUSSELL: Thank you. We're
19 going to ask Board questions and then take a
20 break. Board, this is your chance to inquire.

21

22 EXAMINATION

23 BY MR. MARBLE:

24 Q. In looking at the first page of Exhibit
25 7, that's the final permit as it stands?

1 A. Yes.

2 Q. And it states in there that -- Paragraph
3 1-A, it talks about a fabric filter baghouse,
4 right?

5 A. That's correct.

6 Q. That's what you're requiring in the
7 final permit?

8 A. Yes.

9 Q. Is there somewhere in here that -- Is
10 there a distinction of what kind of bag? Is it
11 fiberglass, teflon coated, or what are you
12 requiring?

13 A. Mr. Marble, members of the Board, there
14 is reference in here in the BACT analysis or
15 summary of the analysis to a teflon coated fabric
16 filter bag. I'm requiring a fabric filter bag,
17 generally a fabric filter baghouse for this as
18 BACT for the control of filterable PM10 and other
19 pollutants as we've discussed.

20 I didn't specify the teflon coated bag
21 in the permit requirement because that would
22 therefore limit -- I'm aware of a teflon coated
23 fabric filter baghouse that is capable of
24 achieving the emission limit deemed BACT for
25 filterable PM10 and other pollutants. However, if

1 I limit it, if I specific wrote the condition to
2 require a teflon coated bag, if there was another
3 style of bag out there that could achieve a better
4 limit than that in the future or as this project
5 moves forward, that would preclude SME from
6 installing that technology. They would have to
7 come in and amend their permit.

8 Q. But you didn't require a teflon -- A
9 teflon provides a better control?

10 A. Right.

11 Q. And so you allowed them to select a bag
12 that provides less control?

13 A. Mr. Marble, members of the board, the
14 limit itself of 0.012 pounds per million Btu
15 represents the control efficiency that that teflon
16 bag was capable of. So that in order to meet that
17 limit, they're going to need to install a bag with
18 at least that capability.

19 However, just to clarify, if I had
20 written a condition to indicate that they're
21 required to install a teflon bag, if they could
22 get a bag that's capable in the future of that, at
23 least that control technology, they wouldn't be
24 able to do that, if there was another style.

25 Q. So the standard that you set at this

1 point requires a teflon bag?

2 A. The emission limit itself, based on the
3 information that I reviewed, they would need to
4 install at least that teflon bag fabric filter.

5 MR. MARBLE: Thank you.

6

7 EXAMINATION

8 BY CHAIRMAN RUSSELL:

9 Q. Just to clarify that, by just stating a
10 filter fabric, it could be -- you believe that
11 they could line it with anything they want -- gold
12 -- just so long as they can meet that emission
13 standard that you set in the permit?

14 A. Mr. Chairman, members of the Board, it
15 would also have to be characterized as a fabric
16 filter, like you said, yes. But as long as they
17 can meet that BACT determined emission limit, the
18 fabric filter could have any coating on it that
19 was appropriate.

20 Q. In general, doesn't teflon help with
21 organics in filters?

22 A. I'm not able to speak to that
23 definitively.

24 CHAIRMAN RUSSELL: That was a long time
25 ago in my past. Bill, you asked me a question.

1 Bill has got quite a few questions. But you were
2 out of the room. We're going to take our lunch at
3 11:30, so that's why I want to push through and
4 take a break halfway through to 11:30, and then
5 move.

6 MS. SHROPSHIRE: I need like a two
7 minute break.

8 MR. ROSSBACH: I have some questions
9 that may take awhile.

10 CHAIRMAN RUSSELL: Let's take ten.

11 (Recess taken)

12 CHAIRMAN RUSSELL: This will be the
13 Board's opportunity. Don actually already got
14 started. So let's go ahead, and I think we'll
15 allow the Board an opportunity now to ask
16 additional questions of the Department through
17 Eric. Robin, do you want to start.

18

19 EXAMINATION

20 BY MR. SKUNKCAP:

21 Q. Could you explain the wet ESP and dry
22 ESP, and teflon and membrane bag just briefly,
23 please.

24 CHAIRMAN RUSSELL: Just the difference
25 between those technologies.

1 A. A dry ESP would be collecting the
2 particles, the pollutants in a dry process;
3 whereas a wet ESP would have a wet substrate on
4 the collection plate, or the cleaning would be
5 accomplished through a wet process.

6 The teflon bag in this case would be a
7 coating on the fiberglass bag, and the fiberglass
8 bag would be, in this context, just a standard
9 fiberglass filter bag.

10 MR. SKUNKCAP: Thank you.

11

12 EXAMINATION

13 BY MS. SHROPSHIRE:

14 Q. So you said that you used a top down
15 BACT approach for this permit?

16 A. The applicant used a five step process,
17 which I would generally describe as a top down
18 BACT process.

19 Q. So in a top down BACT process, is LAER a
20 requirement?

21 A. LAER is not associated with BACT.
22 BACT is a process, and LAER is a process. LAER is
23 applicable to the analysis of a project proposing
24 operations in an area deemed nonattainment for a
25 specific pollutant. BACT is a process that is

1 conducted in an area -- a pollutant specific
2 process that is conducted for a project in an area
3 that is achieving or is unclassified for the
4 National Ambient Air Quantity standards.

5 Q. But within a top down BACT -- not
6 regular BACT, but top down BACT -- is LAER the
7 first step in that process?

8 A. No. The first step in the BACT process
9 is to evaluate the available controls. Should I
10 generally go through the process again?

11 CHAIRMAN RUSSELL: Generally.

12 A. In general, Step 1 in the five step
13 process which we're characterizing as a top down
14 process is analyze the available control
15 technologies for that pollutant; Step 2 would be
16 to eliminate technically --

17 Q. (By Ms. Shropshire) I'm just looking
18 here at Exhibit 1, Page B-5.

19 MR. REICH: Mr. Russell, and members of
20 the Board, if it would help, we do have a chart
21 that was stipulated to and also in. Right after
22 Tab 20 is the five step BACT process illustrated.
23 For information, we could put up that chart.

24 CHAIRMAN RUSSELL: You folks put it up
25 on your chart.

1 MR. REICH: Would you like us to do that
2 again?

3 CHAIRMAN RUSSELL: It might be helpful
4 since this is the top down BACT process.

5 MR. MARBLE: Page B-6, Exhibit 1.

6 Q. (By Ms. Shropshire) B-6 is the next
7 page, Step 1. It says, "List as comprehensive
8 LAER included." Can you explain that.

9 A. Again, identifying all control
10 technologies. LAER means the Lowest Achievable
11 Emission Rate. That wouldn't be something -- You
12 wouldn't list that as a control technology. That
13 would be an emission rate -- that is analyzed
14 through the process. We certainly look at the --
15 As I've discussed in my testimony today and
16 yesterday, that's part of the process, that we're
17 going to, at some point in the process, look at
18 what is the rate out there that's being achieved,
19 the lowest rate out there that's being achieved.
20 But that doesn't mean that that's BACT.

21 Q. Just in terms of this document, did you
22 follow that? In terms of the lowest achievable --
23 In listing the control technologies, did you
24 include the best -- or sorry -- the lowest
25 achievable or include LAER?

1 A. Ms. Shropshire, members of the Board, in
2 listing all the available control technologies in
3 Step 1, that is again project specific. We're
4 going to look at what control technologies for a
5 specific pollutant can we look at for this
6 project. If you look, in parentheses, it does say
7 LAER is included on Page B-6.

8 If you look at the discussion of what
9 the first step is on a previous page, as you
10 pointed me to, what you're looking at is you're
11 looking at what are the available control
12 technologies that are out there to achieve that
13 maximum reduction.

14 In practice, it would seem to me that
15 including in Step 1 the analysis of what is the
16 best that's being achieved out there, that's not
17 typically how it's practiced. We look at the
18 available control technologies for that project,
19 and then we eliminate them, and then we rank them.

20 Q. I'm sorry to interrupt. I'm just going
21 to read. "Technologies required under Lowest
22 Achievable Emission Rate (LAER) determinations are
23 available for BACT purposes, and must also be
24 included as control alternatives and usually
25 represent the top alternatives."

1 A. Okay. Yes. Those technologies that are
2 associated with the LAER determination that would
3 have been made for a project in a nonattainment
4 area for that pollutant, those are certainly
5 technologies that are evaluated. Again, the top
6 technologies, all the top technologies are -- all
7 technologies, including the top technologies, are
8 included in that Step 1. And to the extent that a
9 facility that's operating in a nonattainment area
10 and is subject to LAER is incorporating that same
11 technology, yes. That is certainly a technology
12 that we're looking at.

13 Q. Do you know which plant has the lowest
14 emission limit in the United States for PM10?

15 A. I believe that that was provided in the
16 application, and I believe there is a River Hill
17 facility, I think, that's permitted at 0.010
18 pounds per million Btu, and I would need to refer
19 to the list. There is another one. The River
20 Hill facility was not included in the application.

21 Q. Do you know what control technology they
22 used?

23 A. It is my understanding through my own
24 research that they are incorporating a fabric
25 filter baghouse.

1 Q. And other control technologies?

2 A. That's not my understanding. Based on
3 the available information that I've reviewed, I
4 believe they're incorporating a fabric filter
5 baghouse to comply with that limit.

6 Q. Do you know if they have a condensible
7 limit?

8 A. Ms. Shropshire, members of the Board, I
9 would need to review the information to determine
10 whether or not they do, that facility
11 specifically.

12 Q. Why did you focus on condensibles in the
13 BACT?

14 A. Ms. Shropshire, members of the Board, I
15 conducted an analysis -- Well, the applicant
16 provided an analysis of condensible emissions from
17 this project. In fact, they conducted a
18 comprehensive study of what we would expect for
19 condensibles based on the precursor emissions,
20 precursors condensible PM10 emissions, what would
21 be left over after control.

22 Q. When you say "precursor," can you
23 explain. What do you mean by that?

24 A. Condensible emissions are -- Condensible
25 particulate emissions are emissions that are in

1 gaseous or vapor form as they pass through the
2 control technologies; and then when they enter the
3 atmosphere, they would condense into a
4 particulate. So the precursor pollutants are
5 those pollutants that when they're in the process
6 or in the flue gas, they are a gaseous or vapor
7 form, and then later they will condense. So
8 they're precursors to the condensible particulate.

9 Q. Sorry to interrupt. Why did you focus
10 on condensibles in your BACT?

11 A. Because there was an analysis provided
12 for condensible emissions, and we have, as an
13 agency, begun looking at condensible PM emissions
14 through the BACT process. I believe this is the
15 second permit that we've conducted that analysis
16 for. And so based on information provided in the
17 application specific to this project, we had an
18 understanding of what those condensible emissions
19 would be, and therefore, I reviewed the analysis
20 for BACT purposes.

21 Q. I think it was yesterday you were
22 talking about emission factors for PM_{2.5}, and you
23 said that you couldn't find emission factors for
24 any CFB in the country; is that correct?

25 A. Ms. Shropshire, members of the Board,

1 I'm not aware of any direct PM2.5 emission factors
2 for this project for this type of a process. In
3 fact, I'm generally not aware of PM2.5 emission
4 factors for any process.

5 Q. I guess one of my areas of confusion
6 that I have is -- Let's just look on Exhibit 7,
7 Page 40, where it's talking about control
8 efficiencies. The permit has an actual rate in
9 the permit, correct? Pounds. But this
10 information is efficiencies. And what I'm having
11 trouble is taking this 90 percent plus or minus --
12 who knows -- 80 percent plus or minus -- who knows
13 what. It's confusing to me. We've got this dry
14 FGD, and FFB, or ESP, and then these ballpark
15 numbers.

16 And so in terms of the BACT process,
17 which as I understand it, you look at control
18 technologies, and then come up with a rate, is
19 that correct, in the end?

20 A. Yes.

21 Q. How that permit limit -- It just seems
22 to me that it's backwards, and I'm confused by
23 that. How do you come up with a pounds rate when
24 you've got these numbers that -- As a scientist,
25 when I look at this number -- 90 percent, 80

1 percent -- that's plus or minus who knows what.

2 Those aren't very accurate numbers.

3 So how do you come up with a number as

4 precise as the one you have in the permit?

5 A. Ms. Shropshire, members of the Board,
6 these are generalized control efficiencies here.

7 As we read into the record as part of my
8 testimony, there isn't that much concrete
9 information out there regarding the control of
10 these precursor emissions to condensible PM for
11 any of these control options.

12 Therefore, the information that was
13 provided in the application, that ultimately
14 resulted in a pound per million Btu heat input to
15 the boiler, is based on this specific boiler, and
16 is the best information that's available when
17 considering those types of emissions, those
18 precursor emissions, leading to the overall
19 condensible -- and those are based on that overall
20 condensible PM10 efficiency of approximately 90
21 percent.

22 Q. Is there some analysis that goes
23 through, or is it some vendor's certificate that
24 says, "This is how we come up with that emission
25 number"? It's just when you look at all of these

1 plants across the country, they magically come up
2 with the same number, and I just find that crazy.

3 A. Ms. Shropshire, members of the board, I
4 don't think there is a magical process or number
5 for this. What the vendor --

6 This is information coming from the
7 vendor, as is stated in the application and in my
8 summary, I believe. And so what is happening here
9 is the vendor is analyzing what are the
10 uncontrolled emissions from our boiler, using
11 Powder River Basin coal, a dry FGD, followed by a
12 fabric filter baghouse, and an ESP, what kind of
13 reductions are we getting based on that
14 uncontrolled number.

15 Q. So that final PM number, is that pounds?
16 That rate, is that provided by the vendor, or is
17 the efficiency number provided by the vendor?

18 A. The pounds per million Btu rate is
19 provided by the vendor. We analyze that based on
20 what we're seeing -- through the BACT process. If
21 you look at Page 42 of that exhibit, that provides
22 a summary of the precursor emissions or the
23 constituents of the condensible PM10 emissions.

24 Q. And I guess that's the other part that's
25 confusing to me, because if you look at the

1 condensibles -- which as I understand it are the
2 part that are -- in terms of human health, the
3 part where we're most concerned about. Ten years
4 ago, EPA said, "Hey, guys. This stuff is bad for
5 you. Let's focus on this." We need to pay
6 attention to the 2.5, which seems to be synonymous
7 with condensibles; is that correct?

8 A. As a person that lives and breathes the
9 air out there, I am concerned with health effects.
10 However, as a regulator, my basis for my decisions
11 is on what the law requires.

12 Q. I appreciate that. In terms of why EPA
13 started to focus on the 2.5 -- and I don't know.
14 Is it fair to say that the 2.5 and condensibles
15 are kind of the same thing? Is it fair to lump
16 those together?

17 A. Ms. Shropshire, members of the Board,
18 it's fair to say that my understanding, based on
19 the information I've been able to verify, is that
20 most of the condensible PM emissions are going to
21 be in the size range of 2.5 microns or smaller.

22 Q. Then when we look at Exhibit 4, Page
23 5-48, and 5-49, for HF -- which is one of the main
24 condensibles -- we're ranked eleventh in the
25 country; and for the other one, we're at the

1 eighth. And so a lot of these -- There is plants
2 here that were permitted in 2000.

3 And so I'm having trouble understanding
4 how we're looking at the best technologies and
5 that we can't do better than someplace in Texas.

6 A. Ms. Shropshire, members of the Board,
7 you are correct that they do rank -- according to
8 this table, SME's plant, permitted limit for the
9 plant isn't the top control technology, or isn't
10 the top emission rate, best emission rate.

11 However, it's generally well understood
12 that when analyzing these pollutants specifically,
13 there is a lot of unknowns. Again, it's specific
14 to the fuel. You're not to get much sulphuric
15 acid mist out of utilizing one fuel as you will
16 another fuel. So you're looking at this project
17 on a case-by-case basis, what is happening with
18 this boiler, using this coal, using these
19 controls.

20 And so it may not be the best, but for
21 the purposes of BACT, it's the best that this
22 facility, using that coal, can achieve. That is
23 what BACT is.

24 Q. I'm not sure that the best in the
25 country is even on here, so -- there may be more.

1 But the other thing that I don't understand is --
2 Just help me. When you looked at condensibles and
3 BACT, or the BACT for condensibles, you looked at
4 SO2 and filterables; is that correct?

5 A. Ms. Shropshire, members of the Board,
6 what I looked at were the available control
7 technologies for the precursor pollutants to
8 condensible PM10; and as it turns out, those
9 controls that are the best or top controls for the
10 condensible precursors also are the same controls
11 that were deemed BACT for SO2 and filterable PM10.
12 So they're already employing those top controls
13 for other pollutants, SO2 and filterable PM, and
14 we're getting a co-benefit control, the top
15 co-benefit control for these precursor emissions.

16 Q. And I'm not trying to disagree with you.
17 But from the testimony that Mr. Taylor gave, and
18 from my understanding, the baghouses aren't the
19 most efficient way to reduce condensibles.

20 A. Ms. Shropshire, members of the Board,
21 I'm not going to speak for Mr. Taylor. He speaks
22 for himself.

23 My understanding of the controls that we
24 looked at for this process is that the fabric
25 filter actually provides additional co-benefit

1 control for H₂SO₄ and acid gases, which are major
2 constituents of the condensible PM₁₀; whereas the
3 wet ESP doesn't have that same capability.

4 Therefore, I deemed, or I agreed with the analysis
5 that said these are the top control technologies.
6 You're going to get that co-benefit control.

7 And the information provided in the
8 application and my own independent research
9 resulted -- or led me to the determination, or
10 agreement with the determination that the fabric
11 filter baghouse, the dry flue gas desulphurization
12 unit followed by a fabric filter baghouse is the
13 top control.

14 Q. From what you know now, do you believe
15 that the wet ESP is the best technology to reduce
16 condensibles?

17 A. Ms. Shropshire, members of the Board,
18 no, that's not my conclusion at this time from my
19 knowledge, based on the information that I've
20 seen. In fact, I would believe that our
21 determination is backed up by the most recent EPA
22 permit, which stated that fabric filter control is
23 the top control.

24 Q. For condensibles?

25 A. For filterable and condensible

1 emissions.

2 Q. But just condensibles alone?

3 A. I would need to look back at the Deserit
4 permit that is in evidence. However, it's my
5 understanding that they deemed the fabric filter
6 to be the top control in that case as well, and
7 dismissed the use of a fabric filter followed by a
8 wet ESP.

9 Q. So in your analysis, you never analyzed
10 condensibles separately? You combined the two?

11 A. That's incorrect. We analyze separately
12 filterable PM₁₀; and then in addition to that
13 analysis, we analyzed condensible PM based on the
14 control of the precursors leading to condensible
15 PM.

16 Condensible PM is a little bit
17 different, in that it's not a direct emission --
18 you're controlling the precursors to that
19 pollutant -- versus the filterable is a
20 filterable, solid, physically solid particle
21 that's being collected by the fabric filter
22 baghouse in this case. The condensibles are being
23 controlled as a precursor. Does that make sense?

24 Q. I'm not sure.

25 A. When the precursors to condensible PM

1 enter the atmosphere, they form a particulate.

2 Q. Right, or a liquid, or a solid?

3 A. A mist. They form a particulate. Once
4 they enter the atmosphere and condense, they're
5 considered a condensed particulate emission.

6 Q. Not particulate anymore?

7 A. To get control of that, so that that
8 doesn't happen, so that those precursors don't
9 enter the atmosphere, you control the precursor
10 itself.

11 Q. So sulphuric acid. You look at how you
12 would control sulphuric acid in that control
13 technology?

14 A. Yes. Well, essentially in this case, a
15 flue gas desulphurization unit, and that in
16 combination with the fabric filter bag house, we
17 deem is the top flue gas desulphurization, dry
18 flue gas desulphurization unit, is the top control
19 in SO₂. SO₂ in the flue gas stream is going to
20 ultimately lead to SO₃, H₂SO₄. You're going to
21 get some of those emissions. And those are
22 precursors to condensible PM. So we are employing
23 the top control technology for the precursor
24 itself.

25 Q. So maybe I'll ask it a different way.

1 If you had done it for, let's say, HF and
2 sulphuric acid directly, would you have come up
3 with a different result?

4 A. Ms. Shropshire, members of the Board, we
5 did that analysis for H₂SO₄, acid gases, and acid
6 gases including HCL and HF, which are the primary
7 acid gases. We analyzed available control
8 technologies for those pollutants which happened
9 to be precursors to condensible PM, and the result
10 was that after listing the available control
11 technologies and ranking those control
12 technologies for those pollutants, it so happens
13 that those are already being employed as BACT for
14 SO₂ and filterable PM.

15 Q. So the results for BACT for sulphur and
16 acid gas would be identical to doing one for the
17 precursors? I'm just making sure that I'm not
18 confusing those two things.

19 A. Ms. Shropshire, would you ask that
20 question again?

21 Q. I guess where I'm confused is you talk
22 about the precursors, using the precursors instead
23 of directly doing for condensibles, or are you
24 saying that those are the same thing?

25 A. Ms. Shropshire, members of the Board, it

1 might be clearer if I state that you can't -- The
2 condensible PM is not particulate matter when it's
3 in the process, so I can't imagine a control
4 technology that's going to get the condensed
5 particulate matter because it's not going to be
6 condensed particulate matter until it exits the
7 stack.

8 Therefore, what we're trying to do is
9 we're trying to provide the best control of those
10 pollutants that when prior to leaving the stack
11 are -- we're trying to -- they're precursors.
12 They're ultimately going to condense into
13 particulate matter. So we're controlling those
14 precursors, to avoid getting condensed particulate
15 matter.

16 Q. I guess that's why when I think of
17 condensible, it's not condensed yet. And so
18 condensible is the same as a precursor; is that
19 correct?

20 A. Condensible --

21 Q. Something that's not condensed yet.

22 A. Yes.

23 Q. And those precursors were SO₂ or -- what
24 were the precursors exactly?

25 A. The primary precursors, based on the

1 information that I have available to me, the
2 primary precursors for this process are H₂SO₄ or
3 sulphuric acid mist, hydrochloric acid gas
4 emissions, hydrofluoric acid emissions, trace
5 metals, I believe VOC's. We can look at the
6 table.

7 Q. But you did your BACT for SO₂ and the
8 filterable part for the condensibles? That's the
9 part that I'm confused about.

10 A. Ms. Shropshire, members of the Board,
11 I'll try to take a step back and provide an.
12 Answer that is as clear -- This is as clear as I
13 can state it, or I'll try.

14 We conducted a BACT analysis for the
15 precursors of condensible PM. So we went through
16 Step 1. We evaluated -- or I reviewed a BACT
17 analysis. In Step 1, we identified the available
18 control technologies for these precursor
19 emissions. In Step 2, we eliminated any
20 technically infeasible options. In Step 3, we
21 ranked the remaining control efficiencies for
22 those precursors to condensible PM, and the top
23 control technologies for those precursors were
24 those controls that were already deemed BACT for
25 S₂ and PM₁₀. Therefore, those control

1 technologies constitute BACT. There is no further
2 analysis required.

3

4 EXAMINATION

5 BY CHAIRMAN RUSSELL:

6 Q. Eric, did you have an opportunity to
7 review the Deserit application prior to making the
8 Department's final decision?

9 A. No.

10 MS. SHROPSHIRE: I wanted to read one
11 other thing that or comment or I have a question
12 about.

13

14 RE-EXAMINATION

15 BY MS. SHROPSHIRE:

16 Q. So under Tab 6, Page 20652, I think the
17 third one in, it says, "Notwithstanding the issues
18 and uncertainties related to condensible PM, EPA
19 encourages states to identify measures for
20 reducing condensible PM emissions, particularly
21 where these emissions are deemed significant
22 contributions to the control strategy needed for
23 expeditious attainment. We wish to clarify that
24 in order to take credit in the SIP for reduction
25 of any such condensible PM emissions, there must

1 be enforceable limitations that ensure that
2 reduction in condensible PM emissions."

3 So these enforceable limits could take
4 the form of a limitation on the condensible PM
5 emissions, or total direct PM2.5 emissions. So I
6 guess their lumping condensible and PM2.5
7 together.

8 A. I believe that's exactly what we did in
9 this permit. We regulated filterable PM,
10 including PM, PM10, and PM2.5, using PM10 as a
11 surrogate, because we don't have available
12 emission factors for direct PM2.5 emissions; and
13 we limited condensible PM.

14 Again, let's distinguish between direct
15 PM2.5 emissions, and as we've had this discussion
16 most of -- we're assuming condensible mostly
17 PM2.5.

18 So we conducted a BACT determination for
19 filterable PM2.5 using PM10 as a surrogate, deemed
20 the top control, and included a limit for PM10 in
21 the permit.

22 In addition to that, and in accordance
23 with what you just read, we analyzed and limited
24 condensible PM through limiting the precursors to
25 condensible PM, because we can't control actual

1 condensed PM because it's not been condensed.

2 Otherwise it would be filterable.

3

4 RE-EXAMINATION

5 BY CHAIRMAN RUSSELL:

6 Q. In all cases?

7 A. If it was in particulate, physical
8 particulate form, it would be a filterable
9 pollutant that would be controlled by a fabric
10 filter.

11 Q. It would be filterable, but based on the
12 technology, it would be filtered or not?

13 A. Mr. Chairman --

14 Q. There are two categories of PM we're
15 dealing with.

16 A. Yes.

17 Q. Those that are filtered, those are
18 considered filtered and entering the waste stream;
19 and those that are considered condensible. And
20 then --

21 A. Yes.

22 Q. -- technically removed, because they're
23 filtered, because they become a filterable
24 particulate matter. But depending on the emission
25 control, that will depend on if it's filtered or

1 not, right? If you use a sieve this big, it's not
2 going to catch it, right? (Indicating)

3 A. Correct. Well, depending on -- if it
4 was bigger than that, it would, the filterable.

5 Q. If it does condense, watch out, because
6 it will hurt.

7 MR. ROSSBACH: It's an asteroid.

8 A. So Mr. Chairman, members of the Board,
9 filterable particulate controls would control --
10 and in this case we'll use a fabric filter for the
11 example -- would control particulate matter that
12 is a physical particle as it would be prior to
13 entering that control device. And the fabric
14 filter baghouse will control filterable PM,
15 filterable PM10, and filterable PM2.5 with
16 differing efficiencies.

17 Q. (By Chairman Russell) I agree with that
18 statement.

19 MR. REICH: Mr. Russell, if I just might
20 correct the record with respect to your question
21 about Deserit. It's in the tab at eleven, and
22 permit itself was issued August 30, 2007, after
23 the date of this permit.

24 CHAIRMAN RUSSELL: Right. But I
25 questioned if he had reviewed the application.

1 MR. REICH: Thank you.

2 CHAIRMAN RUSSELL: Draft.

3

4 FURTHER EXAMINATION

5 BY MS. SHROPSHIRE:

6 Q. With regards to this -- So initially SME
7 in their application -- if I'm understanding it --
8 had suggested a rate of .015? I'm just reading
9 from an email here I think under "F," from Mr.
10 Leirow, where he says -- he's talking about three
11 plants that have permit limits of .01, .011,
12 .0135, and he says, "Do you have any information
13 on these facilities that might help combat the
14 state pushing for the .012 limit?" How did you
15 come up with the .012 limit?

16 A. Ms. Shropshire, members of the Board,
17 the .012 pounds per million Btu limit for
18 filterable PM10 contained in the permit is based
19 on the uncontrolled emission rate of 7.78 pounds
20 per million Btu from this unit utilizing Powder
21 River Basing coal. And a 99.85 percent reduction
22 from that number results in 0.012 pounds per
23 million Btu. That was the top control efficiency
24 that was evaluated for this project.

25 Q. Why do you and SME come up with

1 different numbers?

2 A. I can't speak for SME. And in
3 particular, this email is not something that I had
4 available to me in my review. I don't know why
5 they chose to propose a limit of 0.015. Through
6 the BACT process, I determined that 0.015 pounds
7 per million Btu filterable particulate does not
8 constitute BACT for this project.

9 Q. Is PM2.5 regulated?

10 A. Yes.

11 MS. SHROPSHIRE: I think I'll stop
12 there.

13 CHAIRMAN RUSSELL: Next.

14

15 EXAMINATION

16 BY MR. ROSSBACH:

17 Q. Let me take a few minutes here, or maybe
18 more than a few minutes, depending on how it goes.

19 MR. ROSSBACH: David, could you give Mr.
20 Merchant the stipulated -- this is the joint
21 prehearing memorandum.

22 Q. (By Mr. Rossbach) And I'd like to start
23 with Page 4 of the Petitioners' factual
24 contentions. But let me begin by saying first:
25 I've got a lot of questions, Eric, and I really

1 appreciate your saying, "Members of the Board, but
2 can we pass on that a little bit. I think it's
3 very respectful, and the training you've had as a
4 witness is excellent in that regard. But so we
5 can kind of move along, because saying my name
6 over and over again is going -- maybe that's to
7 slow me down. I don't know. But let's just kind
8 of go through the questions.

9 A. Certainly Mr. Rossbach, Mr. Chairman.

10 Q. Just have her take them all out of the
11 record anyways. I'd like to -- Because I'm German
12 and kind of methodical, I'd like to and want to
13 try to understand this and kind of get it in
14 context.

15 I'd like to go through the Petitioners'
16 factual contentions. Yesterday Mr. Rusoff spent a
17 lot of time telling us about you telling us,
18 asking you questions, that let us know what your
19 qualifications are, and the numbers of permits
20 you've reviewed, and the number of training
21 sessions you've been to, and your familiarity with
22 the federal record and things like that. So
23 hopefully we can kind of go through this and maybe
24 we can move it.

25 Let's just start -- I'm going to start

1 at the beginning, No. 1. "Reducing emissions of
2 PM2.5 is a major public health concern." Do you
3 agree with that?

4 A. Yes.

5 Q. And do you agree with the statement that
6 is quoted there from the Federal Register, or do
7 you have any reason to disagree with the EPA
8 statement that, "Decreasing PM2.5 in the ambient
9 air by only .5 micrograms per cubic meter can
10 prevent as many as 25 to 50 premature deaths each
11 year"? Any reason to disagree with that?

12 A. I have no reason to disagree with that.

13 Q. Then looking at two, "Microscopic
14 particles in the PM2.5 range are small enough to
15 lodge deep into the lungs. Even short term
16 exposure to PM2.5 is known to cause serious
17 respiratory illnesses, including asthma,
18 cardiovascular illness, heart attack, premature
19 death." Do you agree with that generally, as far
20 as you know?

21 A. I have no reason to disagree with that.

22 Q. And do you also agree that, "Those
23 particular sensitive to PM2.5 exposure include
24 children, older adults, and people with heart and
25 lung disease"?

1 A. I have no reason to disagree with that.

2 Q. Getting into a little more technical
3 area on No. 3, it says, "PM2.5 is produced chiefly
4 by combustion processes and by atmospheric
5 reaction to various gaseous pollutants, and they
6 can remain suspended in the atmosphere for days to
7 weeks, and be transported many thousands of
8 kilometers." Is that generally consistent with
9 your understanding?

10 A. That makes sense to me, yes.

11 Q. Looking at No. 4, do you agree that the
12 Highwood, HGS, Highwood Generating Station, will
13 be a major source of PM2.5 emissions, and that the
14 CFB boiler alone is anticipated to emit 299 tons
15 of PM10 each year. Given that SME is anticipated
16 to achieve over 99 percent control efficiency for
17 filterable particulates in the larger PM10 size
18 range, and 80 to 90 percent control efficiency for
19 condensible particulate in the larger PM10 size
20 range, the vast majority of the HGS uncontrolled
21 PM emissions will be in the smaller PM2.5 size
22 range"? Do you agree with that generally?

23 A. The term "major source" needs to be put
24 in context here. I have no way of knowing, based
25 on the lack of emission factors, reliable source

1 test methods, whether or not HGS is actually a
2 major source of PM2.5. I analyzed PM10 as a
3 surrogate for PM2.5.

4 Q. I understand what -- So let me ask you
5 that. You had available to you the boiler
6 manufacturer's data, did you not, as to what would
7 be emitted from the normal boiler processes for
8 the Alstem boiler that was going to be used at
9 this plant?

10 A. In respect to PM10 emissions, I have
11 what they determined would be the uncontrolled
12 emission rate for PM10.

13 Q. They didn't provide you, or they were
14 not able to provide you with a rate for 2.5?

15 A. The applicant did not provide me with
16 that information, and I am unable to get that
17 information on my own.

18 Q. Did you ask the applicant to request
19 from Alstem what their 2.5 uncontrolled emission
20 rate would be burning this particular coal in this
21 particular application?

22 A. I'm not certain if that's in the record.
23 My recollection is that I have had conversations
24 with their engineer regarding what would be
25 anticipated for PM2.5 emissions. I don't know

1 that, I don't know when that happened, in what
2 context that question would have been asked, other
3 than probably than through review of the
4 application.

5 Q. You were never provided that information
6 from the boiler manufacturer indirectly and then
7 through SME about what their uncontrolled 2.5
8 particulate would be?

9 A. That's correct. I was never provided
10 that information.

11 Q. And you never followed through? If it
12 was asked for, it was never followed through to
13 ensure that you had it available to you; is that
14 correct?

15 A. It was not provided to me, and I used a
16 surrogate analysis.

17 Q. I understand that, but the question I'm
18 asking you is: Did you ever follow through to try
19 to find out what 2.5 emissions would be expected,
20 uncontrolled emissions would be expected from the
21 Alstem boiler that Bison Engineering was proposing
22 for this project?

23 A. Mr. Rossbach, as I testified just
24 previously, it's my recollection that those
25 questions were asked at some point during the

1 process, but that we relied, in fall back because
2 that information was not available -- at least
3 that was what reported to me, that that
4 information was not available -- I relied on the
5 surrogate analysis. I have no way of -- If I
6 don't have the information, I can't use it.

7 Q. But can't you say that, "The application
8 is incomplete because I want that information"?
9 You could have done that, couldn't you?

10 A. That could have been done. To be
11 consistent -- Let me follow up. To be consistent
12 with how these emissions are typically analyzed, I
13 used guidance that's out there and available; and
14 therefore, it was my determination it would be
15 inappropriate to call the applicant deficient for
16 that reason.

17 Q. But it was something that you could have
18 done if you wanted to? You've asked for
19 additional information here, and at one point you
20 even asked them to do an -- conduct a particulate
21 matter with an aerodynamic diameter less than 2.5
22 microns ambient impact analysis. You asked them
23 to do that, didn't you?

24 A. Yes, based on PM10 emissions.

25 Q. Right. But you asked them to do an

1 additional analysis for 2.5, an ambient impact
2 analysis, did you not?

3 A. Yes.

4 Q. So you could have asked them, "Look. We
5 want to know what the 2.5 emission, uncontrolled
6 emissions from this boiler are, because NAAQS --
7 we now have a NAAQS for 2.5. It's been in place
8 for ten years. We're looking at -- The EPA is
9 looking at it. We'd like to know what this would
10 be"? You could have done that, couldn't you?

11 A. I could have done that.

12 Q. So let's go back to the rest of this
13 question. "The CFB boiler is anticipated to emit
14 299 tons of PM10 each year;" is that correct?

15 A. PM10 filterable plus condensible.

16 Q. 299 tons approximately; is that correct?

17 A. Yes.

18 Q. Would you then look at the next sentence
19 here, and it says, "Given that SME is anticipated
20 to achieve over 99 percent control efficiency for
21 filterable particulate in the larger PM10 size
22 range, and 80 to 90 percent control efficiency for
23 condensible particulate in the larger PM size
24 range, the vast majority of the HGS uncontrolled
25 PM emissions will be in the smaller PM2.5 size

1 range;" do you agree with that?

2 A. I would agree with that statement.

3 Q. So now let's go to No. 5. No. 5 is
4 basically a citation from the 70 Federal Reg. Do
5 you have any reason to disagree with that
6 statement that the obligation to implement PSD was
7 triggered upon the effective date of the NAAQS for
8 PM2.5?

9 A. I'm sorry, Mr. Rossbach. Could you
10 point me to where you were again?

11 Q. I'm on No. 5. I'm just going down one
12 by one. No. 5. And it's referring to the
13 statement in the Federal Register. Do you have
14 any reason to agree, disagree, with the statement
15 made there by EPA that, "The obligation to
16 implement PSD was triggered upon the effective
17 date of the NAAQS for PM2.5"?

18 A. That would be when PM2.5 became a
19 regulated -- a pollutant subject to regulation.

20 Q. Right. And the obligation to implement
21 PSD was triggered upon that effective date?

22 A. That's correct.

23 Q. Then looking at No. 6, "The primary
24 health based PM2.5 NAAQS became effective over ten
25 years ago, and the 24 hour NAAQS have since been

1 revised to nearly twice as stringent to response
2 to extensive data regarding the health impacts
3 regarding PM2.5." Do you agree or disagree with
4 that?

5 A. I agree with that.

6 Q. Now, No. 7. "While the NAAQS has been
7 in effect for PM2.5 for over a decade, DEQ did not
8 require SME to undertake a BACT for PM2.5 during
9 the permitting process for HGS;" is that true?

10 A. That is not true.

11 Q. Well, I understand the surrogate, but
12 did you do a specific 2.5 where you set up a
13 matrix, and looked at the control technologies
14 specific for 2.5? You did not do that, did you?

15 A. That analysis is not technically
16 possible at this time.

17 Q. Well, we'll come to that in a minute.
18 But you did not do that, is the answer to the
19 question?

20 A. I did not directly require a PM2.5
21 analysis without using a surrogate.

22 Q. Look at No. 8. "Technologies for
23 control of PM2.5 emissions, both filterable and
24 condensible --" we'll take out the "readily
25 available" -- "are available" -- and I'll take out

1 "widespread" -- "use. Such technologies include
2 membrane bags which can reliably capture
3 filterable particulate down to .5 to .3 microns."

4 You heard the testimony of Mr. Taylor.
5 Do you have any reason to disagree with the
6 testimony of Mr. Taylor yesterday with regard to
7 the availability of membrane bags and the
8 filterable efficiency for those bags? Do you have
9 any reason to disagree with him?

10 A. I'm not aware of the membrane bag
11 technology through any BACT analysis that I've
12 seen. And the fabric filter is also capable of --
13 The fabric filter, as analyzed through our
14 process, is also capable of controlling filterable
15 particulate down to submicron size.

16 Q. Do you know what the relative efficiency
17 of membrane bags versus teflon bags is at
18 submicron size?

19 A. I do not know that information.

20 Q. Will you defer to Mr. Taylor with regard
21 to those particular technical issues?

22 A. (No response)

23 Q. Would you defer to his expertise in
24 terms of those particular technical issues?

25 A. Would I defer to his --

1 Q. Would you concede he has expertise in
2 these areas? Do you have any reason to disagree
3 with his expertise?

4 A. No, I don't have any reason to disagree
5 with that.

6 Q. And then on the second half of that
7 paragraph, it talks about, "Wet electrostatic
8 precipitators can achieve up to 99 percent control
9 of particulate in the PM2.5 size range." Do you
10 agree with that?

11 A. I'm very sorry. Where are we again?

12 Q. Turning on the next page, Page 6, and at
13 the top, it's a continuation of the same Paragraph
14 8, Paragraph 8 that we were just talking about.
15 Do you see that? Do you agree with the clause,
16 "Wet electrostatic precipitators (ESP) can achieve
17 up to 99 percent control of particulate in the
18 PM2.5 size range"? Do you agree with that, or any
19 reason to disagree with that?

20 A. My reasoning for -- I can't say that
21 that's a true statement, because I don't think
22 that it's generally common knowledge to know what
23 uncontrolled emissions of PM2.5, specifically
24 PM2.5 are for this boiler. If you don't know what
25 uncontrolled emissions are, you cannot make that

1 type of a determination.

2 Q. But the question -- I'm not asking the
3 question in terms of this particular boiler. I'm
4 asking the question generally. Do you agree that
5 there is information available to you to say that
6 there are wet electrostatic precipitators which
7 can achieve up to 99 percent control of
8 particulate in the PM2.5 size range?

9 A. I disagree with that.

10 Q. You don't agree that there is
11 information or that -- Do you agree -- So you're
12 disagreeing with Mr. Taylor about that technology?

13 A. I'm disagreeing that there is -- I've
14 not seen that information. That's what I'm
15 saying.

16 Q. That's fine. And No. 9 I assume is
17 correct that you did not consider using membrane
18 bags?

19 A. That's correct.

20 Q. And No. 10, I think we've had some
21 discussion about. You did consider wet ESP as a
22 part of a combination with wet FGD? You did
23 consider wet ESP as a technology as a part in
24 combination for control of condensibles; is that
25 correct?

1 A. That's correct, and also stand alone for
2 filterable PM10.

3 Q. I didn't see that. Maybe I missed that.

4 A. I can point you to the permit location,
5 if you'd like.

6 Q. That's fine. So where did you get the
7 information about the efficiency of wet ESP?
8 Where did that come from in that combination?

9 A. That would have been provided by the
10 applicant.

11 Q. And did you know which particular vendor
12 or which particular wet ESP manufacturer was being
13 utilized to do that analysis?

14 A. No.

15 Q. That particular information was not
16 provided as part of the permit application, where
17 they got that information?

18 A. To the best of my recollection, they did
19 not provide a vendor name for their specific
20 technology proposed or analyzed.

21 Q. Let me step back one simplistic
22 question. Exhibit 4 in this case is the
23 application, I think. Do you get more than just
24 that application, or is that all you get? You get
25 like sort of a background box of appendices where

1 they got this information, or the source material
2 for how they decided that they were going to get
3 this level of efficiency? Do you get anything
4 more than that, or do you just get the little
5 application?

6 A. The application itself -- What's
7 provided in Exhibit 4 is small pieces of the
8 application. The application itself is somewhere
9 around 500 pages long, including appendices,
10 modeling analyses, coal specifications. There
11 were also DVD's provided for a coal test burn that
12 took place. There was lots of information.

13 Q. I assumed that. That's what I --
14 because when you say, "They provided us with
15 information about the efficiency of that
16 particular combination technology," you had
17 something more than just that little chart?

18 A. Yes.

19 Q. So combination technologies including
20 wet ESP was something that was provided to you as
21 an alternative by SME; is that correct? In their
22 own BACT; is that right? The wet FGD followed by
23 the wet ESP was one of the technologies, which was
24 a combination technology, which was provided to
25 you as a part of the BACT that Bison or the people

1 working for Bison did and submitted to you; is
2 that correct?

3 A. For condensible PM, yes.

4 Q. And wet ESP standing alone was also
5 considered as a part of the filterable?

6 A. That's correct.

7 Q. So Mr. Taylor yesterday proposed a
8 baghouse plus wet ESP filterable bag technology
9 followed by a wet ESP. That's another combination
10 technology, not unlike the combination technology
11 that was part of the BACT given to you by Bison;
12 is that correct? It's another combination
13 technology; is that correct?

14 A. That is correct.

15 Q. Let's skip No. 11 and No. 12 because
16 there is a lot of information in the permit that
17 talks about some of the same stuff; and then we'll
18 skip No. 13, No. 14, No. 15. I think they've been
19 talked about by Miss --

20 No. 17. This goes to the Seitz memo
21 that was part of your testimony yesterday. I'll
22 give you a chance to read through that, and I'm
23 going to just ask one question.

24 MR. REICH: What number are we on?

25 MR. ROSSBACH: I'm on No. 17. I think

1 we've dealt with those plenty, the Forest Service
2 and that all that other stuff.

3 Q. (By Mr. Rossbach) Do you see No, 17,
4 Eric? Have you had a chance to read that?

5 A. Yes.

6 Q. That's the memo that Mr. Seitz sort of
7 set out the concerns that they had in 1997 about
8 doing a PM2.5 BACT, so they basically authorized
9 the states as the delegated Clean Air Act agency
10 to use the PM10 surrogate; is that correct?

11 A. That's correct.

12 Q. That's where that came from?

13 A. That's correct.

14 Q. And then No. 18. This so-called Seitz
15 memo was never adopted through notice and comment
16 federal rulemaking; is that correct?

17 A. That is correct.

18 Q. And do you agree that -- Look at No. 19,
19 and read that through for me, if you would.

20 A. (Examines document) Out loud?

21 Q. No, just read through it. I don't want
22 to ask you a question without giving you a chance
23 to look at it.

24 A. (Examines document)

25 Q. So the memo does provide that -- the

1 statements in that memo do not bind the state, and
2 local governments, and public as a matter of law;
3 is that correct?

4 A. That is correct.

5 Q. The Seitz memo doesn't bind you to using
6 PM10 as a surrogate, does it?

7 A. It does not.

8 Q. It doesn't require you that -- the only
9 way you can do a BACT for a power plant is by
10 using PM10 as a surrogate; is that right? You
11 could have come up with another method if you felt
12 that you, as the delegated agency, wanted to do a
13 different way of looking at it?

14 A. That's correct.

15 Q. So you had a choice then about whether
16 to use PM10? You weren't required to use PM10 as
17 a surrogate; is that right?

18 A. That's correct.

19 Q. Let's look at No. 20. "The Seitz memo's
20 guidance to rely on BACT analysis for PM10 --" and
21 I'll add as a surrogate -- "does not ensure
22 maximum achievable reductions in emissions of
23 PM2.5;" do you agree with that?

24 A. Yes.

25 Q. Then look at No. 21, if you would, and

1 read through that for a minute briefly.

2 A. (Complies)

3 Q. We'll take it one part at a time. Do
4 you agree that a control technology that is deemed
5 to be BACT for PM10 may not be BACT for PM2.5?

6 A. I think we have to put this in context
7 here. I think that that's --

8 Q. Let's start with answer the question,
9 and then we'll put it in context.

10 MR. REICH: I object. I think he should
11 be entitled to answer questions.

12 MR. ROSSBACH: He can answer my
13 question, which is yes or no, and then he can --
14 I'm not going cut him off from explaining, or you
15 can -- Mr. Russell would have a chance --

16 Q. (By Mr. Rossbach) Eric, yes or no.

17 A. Yes.

18 Q. And then, "In general, control
19 technologies that are highly effective at
20 controlling PM10 will achieve lesser control
21 efficiencies for PM2.5;" do you agree with that?

22 A. I cannot say whether or not that's true,
23 no.

24 Q. And then the last question is, "At the
25 same time, some particulate matter control such as

1 membrane bags and wet ESP are better than others
2 are better than others at capturing smaller
3 particles." I think we've already addressed that.
4 Yes or no?

5 A. I don't have that information.

6 Q. So going back to Mr. Reich's concern, I
7 want to give you a chance to put it in context.

8 A. What I was saying there -- "A control
9 technology that is deemed to be BACT for PM10 may
10 not be BACT for PM2.5" -- and I generally answered
11 yes. However, the BACT process requires certain
12 things. I don't think that the BACT -- I think
13 there are technical problems right now that still
14 exist, some of which are highlighted in the Seitz
15 memo, to conducting a PM2.5 BACT. So I don't know
16 that you can make that statement. We have to know
17 what uncontrolled PM2.5 emissions are in order to
18 conduct a BACT analysis, direct PM2.5 emissions.
19 We don't have that ability right now.

20 Q. Well, I heard Mr. Taylor say that you
21 could have asked the boiler manufacturer what the
22 uncontrolled emissions were for that particular
23 boiler, and that if they didn't know, in order to
24 sell the boiler, they do a test burn, they do the
25 lab work, they try to tell you what that number

1 was so that you would buy that from them. So if
2 you would had gone to SME and demanded that you
3 knew what the 2.5 was, SME would have gotten it
4 for you; don't you think that's true?

5 A. No, I don't. In general, I think that
6 one of the problems here that we're talking about
7 is: There is no promulgated and approved direct
8 PM2.5 emissions monitoring test, so I don't know
9 how you would get that information. And in
10 addition -- and I'll just put this for my purposes
11 here, for answering your question -- without Mr.
12 Taylor providing Alstem's spec sheet which shows a
13 PM2.5 direct emission factor, I believe that
14 that's hearsay.

15 Q. Well --

16 A. I can't rely on that. Maybe I used the
17 wrong term.

18 Q. Calls for a legal conclusion.

19 A. Calls for a legal conclusion. I can't
20 say that.

21 Q. I understand what you're your concern
22 is. All I heard was Mr. Taylor yesterday say that
23 as a representative of a boiler manufacturer, if
24 someone had come to him and said, "We want to buy
25 your boiler, and we want to know what the

1 uncontrolled emissions are," they would have found
2 out. That's all I'm following up on, what he
3 said. And so I'm just wondering if you had wanted
4 and you had insisted that you find out what the
5 2.5 was, they would have gotten you some
6 information, wouldn't they? They would have told
7 you, "Well, we're not certain about it, but we
8 believe it's about this, because this is how we
9 came about it." Don't you think they would have
10 done that if you would have asked them?

11 A. I think your question has a lot of
12 speculation in it. I don't know that that's true.

13 Q. Well, at least Mr. Taylor, when he was
14 working for a boiler manufacturer, he would have
15 tried to provide you that; isn't that what he said
16 yesterday?

17 A. That's what he said.

18 Q. Do you agree with the first sentence of
19 No. 22, "PM2.5 is significantly more toxic in
20 smaller concentrations than PM10"?

21 A. I believe that's depending on what the
22 PM10 is made of. I guess there could be some
23 toxic characteristic of a specific particle in the
24 PM10 range. But given what I've read before and
25 the EPA studies, and other studies, generally

1 PM2.5 is more hazardous than PM10.

2 Q. Then look at No. 23. And as somebody
3 who does BACT, maybe you can tell me whether you
4 agree or disagree with No. 23. "Because PM2.5 is
5 more dangerous than PM10, technologies that
6 achieve higher control efficiencies for PM2.5 or
7 its precursors may be considered cost effective in
8 a BACT analysis for PM2.5, whereas in a BACT
9 analysis for PM10, the same technologies would be
10 considered unreasonably expensive." Do you agree
11 with that?

12 A. Again, based on the information that I
13 have available to me, I don't think that that
14 analysis can be done at this point.

15 Q. Well --

16 A. At least in a defensible manner.

17 Q. I understand. Let's skip ahead to No.
18 25. No. 26. This is made of record. It has to
19 do with the Federal Register that was brought to
20 us yesterday. "As EPA knowledge in 2005, no new
21 regulations are required to conduct BACT analysis
22 for PM2.5;" do you agree with that?

23 A. Are you on No. 25 here?

24 Q. 26. Let's go back to No. 25. Let's
25 start with No. 25. Do you agree that in November

1 2005, EPA announced that concerns raised in the
2 Seitz memo had largely been resolved, and on this
3 basis, the agency proposed new implementation
4 rules with respect to 2.5;" do you agree with
5 that?

6 A. That's a statement, yes, out of that
7 document, the Federal Register.

8 MR. REICH: I'm just going to object,
9 Mr. Rossbach. We should have the right to read
10 other pertinent provisions of that regulation,
11 because that doesn't --

12 MR. ROSSBACH: But the regulation is
13 record.

14 MR. REICH: You're taking pieces of it
15 and cross-examining on those pieces, and it's not
16 fair -- the entire context. That's all.

17 CHAIRMAN RUSSELL: I tend to agree,
18 Bill, because I'm reading parts of that same
19 document, both of the CFR's, and I can pull
20 portions up that state -- and I don't want to act
21 like an advocate for any party, but it talks about
22 -- in the 2005 record, it talks about PSD coming
23 later.

24 MR. ROSSBACH: That's fine.

25 CHAIRMAN RUSSELL: Let's just be really

1 careful. I'm sure you feel you are.

2 MR. ROSSBACH: I'm just going through
3 trying to get straight what we agree or don't
4 agree with. That's all. Because I'm not sure what
5 we agree or don't agree with after hearing the
6 testimony so far.

7 Q. (By Mr. Rossbach) Do you agree with the
8 statement then that out of the -- Do you have any
9 reason to disagree that the 1997 guidance stated
10 that sources would be allowed to use
11 implementation of PM10 as a surrogate for NSR
12 requirements until certain difficulties were
13 resolved, primarily the lack of tools to calculate
14 emissions of PM2.5 and related precursors --" I
15 think you've talked about that -- "the lack of
16 adequate modeling techniques to project ambient
17 impacts and the lack of 2.5 monitoring. As
18 discussed in this preamble, those difficulties
19 have been resolved in most respects, and where
20 they have not been, the proposal contains
21 appropriate provisions to account for it.

22 I'm finishing up on No. 25. This is a
23 quote from the Federal Reg. You were aware of
24 that Federal Register statement guidance by EPA?

25 A. Yes.

1 Q. And then in No. 26, are you aware that,
2 "The EPA acknowledged in 2005 that no new
3 regulations were required to conduct a BACT
4 analysis for PM2.5. The requirements applicable
5 to New Source Reviews and SIP for the obligation
6 to subject sources to NSR permitting for PM2.5,
7 direct emissions are codified in the existing
8 federal regulation, and can be implemented without
9 specific regulatory changes." Do you agree with
10 that as stated?

11 MR. REICH: Same objection.

12 Q. (By Mr. Rossbach) Any reason to
13 disagree with that coming from the Federal
14 Register?

15 A. That's what it says.

16 Q. Emission factors that -- Let's just get
17 a clarification, go back. An emission factor is
18 like a published statement that provides some
19 guidance based upon lots and lots of testing of
20 different comparable boilers to come up with an
21 assumption about how much of a particular
22 uncontrolled particulate will come out of a
23 boilder of a certain technology; is that how that
24 works?

25 A. It's a tool used to estimate emissions,

1 yes, based on --

2 Q. It's an estimate based upon lots of data
3 gathered; is that correct?

4 A. That's correct.

5 Q. But as I understand it, you also depend
6 upon the manufacturers to get specific technology
7 information about the particular technologies that
8 are proposed on a case-by-case basis; isn't that
9 true?

10 A. Yes. I think that the ideal emission
11 factor would be one that is based on the unit that
12 you're analyzing, whereas a generally published
13 emission factor might be just a best guess, best
14 estimate.

15 Q. So obviously the best thing that you
16 could do is get the specific data from the boiler,
17 and the type of coal that they were going to burn;
18 is that true?

19 A. That would be the best emission factor,
20 yes.

21 Q. So when you said -- So what I was
22 confused about yesterday, when you said there was
23 no published emission factor for 2.5, it's just
24 that there hadn't been enough data gathered yet,
25 or a consensus about what that would be; is that

1 correct?

2 A. I'm not aware of a published emission
3 factor for this type of unit, yes.

4 Q. I understand that. It just hasn't
5 gotten there yet; is that correct? At some point,
6 there will be a published emission factor?

7 A. That would be my hope and assumption,
8 yes.

9 Q. But you don't need an emission factor,
10 because you could -- at a specific site, if they
11 had provided you with 2.5, you wouldn't have gone
12 to an emission factor, you would have used what
13 they gave you; isn't that true?

14 A. Had I had a reliable way of estimating
15 PM2.5 emissions, I believe that I could have
16 conducted a BACT analysis specific to PM2.5.

17 Q. Looking at No. 28, maybe we can take a
18 minute because it's a long one there, and as
19 somebody who is not as familiar with these test
20 methods as maybe you are. Did you look at that
21 for me? Have you had chance?

22 A. For the record, I'm just going to state
23 at the outset here: When talking about
24 conditional test methods and reference methods,
25 I'm aware of what they are, and what they're

1 intended to be used for. I'm not a compliance
2 officer. I don't have any stack testing
3 experience. My experience would just be based on
4 things that I've analyzed. So I can't speak to
5 the test methods themselves.

6 Q. That's fine. Are you aware that the EPA
7 has developed three different test methods for
8 measuring condensible particulate emissions?

9 A. I'm aware that there are conditional
10 test methods available.

11 Q. That's fine.

12 A. As well as Promulgated Test Method 202
13 for condensibles, which has been shown to have
14 some problems.

15 Q. Do you know the efficiency of the fabric
16 filter for controlling 2.5? Is that something
17 that a manufacturer of a fabric filter would be
18 able to provide you with?

19 A. Again, I'll just state: Based on the
20 information I've had available to me, you would
21 need to know what the uncontrolled emissions going
22 into that baghouse were prior to having any
23 understanding of what the control efficiency would
24 be. And I don't have that information available.

25 Q. I'm not talking about a particular

1 component of it. You can't tell by the nature of
2 the materials and the function -- Doesn't a vendor
3 tell you what they think the efficiency of their
4 particular product is going to be for particular
5 chemicals, particles, whatever?

6 A. They don't tell me what -- and to the
7 best of my knowledge, they don't tell the
8 consultant either, what the control efficiency is
9 for PM2.5. Now, you're talking about the
10 material. Let's also understand that with a
11 fabric filter, you're getting particulate control
12 through the filter cake build-up on the bag. So I
13 don't know --

14 Q. But the overall functioning of that
15 particular technology, isn't that something that
16 the manufacturer is going to want to promote to be
17 able to sell his product? "Ours is more efficient
18 than our competitor's." Somewhere that
19 information is available, isn't it?

20 A. Not to the best of my knowledge, no,
21 it's not available.

22 Q. Well, that's fine. How does SME decide
23 whether they're going to buy Company ABC's product
24 versus company XYZ's product? How do they decide
25 which one, other than cost? Is there some other

1 efficiency that they look at? Somebody who comes
2 to a plant, comes to their office, and says,
3 "Here. Ours is better than XYZ's because we can
4 control sulphuric acid better," or "We can
5 control, because of the particular weave, or the
6 particular fabric material, or the way that we put
7 the teflon into the material"?

8 You said to us that the teflon is more
9 efficient. Is it more efficient at 2.5 or only at
10 ten, or can we find that out?

11 A. I wasn't part of SME's development plan
12 for this permit. I reviewed the information
13 pertinent to this project from a control and
14 emission standpoint, based on the information
15 available and what the law says.

16 Q. But that's information -- Have you ever
17 tried to get that information? Have you ever
18 asked them, "How do you know it's going to work?"
19 Don't they have to depend upon a manufacturer
20 telling them, "We're going to get this
21 efficiency," for them to do their BACT? Don't
22 they have to depend upon somebody telling them --

23 A. I think that I stated yesterday that
24 part of the issue here is that we rely on the
25 application, because they have lots of time to

1 evaluate this -- as you've just discussed -- and
2 I've got a period of time which is significantly
3 shorter than that to evaluate it.

4 So I need to take information that I
5 have available to me through the application, and
6 some of my own research, certainly my own research
7 to verify the information and that kind of thing
8 that's provided to me. But I don't know -- I
9 can't -- I can tell you with a high level of
10 confidence that if I called Alstem Boilers and
11 asked for that emission factor, it would not be
12 given to me, either because it's not available, or
13 because it's not something that they want to
14 share. I don't know. It's all speculation.

15 Q. I understand. But somebody, someplace,
16 in the chain of things had to make decision as to
17 whether to use an XYZ bag or an ABC bag, and that
18 has to be based upon specifications; don't you
19 think that would be likely?

20 A. That's very likely. I don't know that
21 that would be something that they had for PM2.5.
22 I just don't know that. I don't know that.

23 Q. I understand. I'm not accusing you of
24 anything. I'm just trying to find out what you
25 did know, and what you could have known if you

1 would have asked them for it. Presumably
2 someplace in this had this information for them to
3 be making these decisions. I just heard what Mr.
4 Taylor said he would have provided as a vendor,
5 and I'm trying to find out what they told you.
6 That's all.

7 A. They did not tell me that. They did not
8 give me that information.

9 Q. So going back a little bit to the -- let
10 me ask you one other thing. Mr. Rusoff asked you
11 about the use of an emission standard for
12 condensibles; is that correct? Do you remember
13 that discussion about that that was something that
14 EPA had suggested, that you didn't need to impose
15 a condensible limit until 2011 or something like
16 that? Do you remember that?

17 A. Yes.

18 Q. SME asked you to not have a condensible
19 limit; isn't that true?

20 A. That's correct.

21 Q. But you guys decided that was something
22 that you felt was appropriate to have at this
23 time; is that correct?

24 A. That's correct.

25 Q. And you felt that there were the tools

1 available at that time to impose those kind of
2 limits and to be able to monitor their compliance
3 with them prior to 2011; isn't that correct?

4 A. That's correct. Based on information
5 included in the application, we felt like we had
6 the information necessary to estimate and limit
7 condensible PM emissions based on precursor
8 pollutants.

9 Q. So just let me understand it, and sort
10 of break this down a little bit. Essentially you
11 had a choice? You had a choice to either impose a
12 condensible limit or not, and EPA told you that
13 you have a choice? They were recommending to you
14 not to include it, and SME asked you not to
15 include it, but in that instance you decided to go
16 forward and include it; isn't that true?

17 A. That is true.

18 Q. It's a different situation with PM2.5.
19 EPA didn't tell you you had to use the surrogate
20 anymore. In fact, the 2005 Federal Register
21 suggested that most of the problems with 2.5 had
22 been resolved. But in that instance, you chose to
23 do what SME wanted; is that correct?

24 MR. REICH: Objection to your
25 characterization of that question. It doesn't say

1 that.

2 A. There is a difference between -- There
3 is a big difference there in your statement, and
4 that is: I believed through the application that
5 I had enough information to analyze and limit
6 condensable particulate matter. I do not have,
7 and do not believe, and it was not provided to me
8 any information regarding direct PM2.5 emissions.
9 Therefore, I don't have that component. How can I
10 directly regulate PM2.5 in a defensible manner? I
11 could make something up, I guess, but that would
12 not be defensible.

13 Q. (By Mr. Rossbach) You could have asked
14 them for that information, too, couldn't you? We
15 already had said that?

16 A. Again, to the best of my recollection,
17 that was part of a conversation at some point
18 during the process, but absent that information, I
19 relied on the defensible surrogate approach that
20 is suggested by EPA.

21 Q. Right. But what we have here is: You
22 asked for it; they didn't give it to you; and you
23 were satisfied with that for some reason. And we
24 don't have a record of why they denied giving you
25 that information. All we know is they didn't give

1 you that information, and you let it go. And you
2 had a choice to demand that information and you
3 didn't. You had a choice to make them comply with
4 a condensible limit, and you did, and I applaud
5 you for that. I'm thrilled that you did that.

6 But I wonder why you didn't just go and
7 say, "Okay. We've had ten years of NAAQS. We
8 know that 2.5 is much more hazardous. We know
9 that the PM10 surrogate doesn't get all -- doesn't
10 really tell us how much 2.5 is getting out there,"
11 and you didn't ask them and insist that they have
12 -- that they provide you with that information.
13 Why is that?

14 MR. REICH: Objection. The question
15 assumes a fact not in existence, which is that SME
16 denied or the boiler denied giving the
17 information. He did not testify to that.

18 Q. (By Mr. Rossbach) You didn't get the
19 information, and you didn't ask for it, you didn't
20 insist on it?

21 A. Based on my experience in going back
22 many years and analyzing many projects, it's my
23 understanding that the EPA policy is that using
24 surrogate is an acceptable and defensible process
25 which is used by every state, by EPA, by everyone

1 who is in this business. That is an acceptable
2 methodology. Therefore, in the absence of that
3 information being provided to me through the
4 application process, I relied on a process which
5 is defensible and appropriate by all standards.

6 Q. But it wasn't a required process?

7 A. It was not a required process.

8 Q. Just kind to of follow up. And I don't
9 remember. With the October 3rd comment sheet that
10 you wrote.

11 A. The draft.

12 MS. DILLEN: I believe it's Exhibit H.

13 Q. (By Mr. Rossbach) Do you have that,
14 Eric?

15 A. I do.

16 Q. Let's look at Page 3. Do you see Page
17 3?

18 A. Yes.

19 Q. I'm looking at No. 9. Do you see that?

20 A. Item 9 on Page 3, yes.

21 Q. Item 9, yes. So after you did the
22 analysis of the permit application, one of the
23 things that you were going to insist on is that
24 SME/HGS must provide manufacturer's specifications
25 or other appropriate information indicating that

1 any proposed baghouse and emission rates of 0.005
2 grams per -- I don't know what TCH is.

3 A. Grains per dry standard cubic foot.

4 Q. And 0.01 Gr. per DSCF KCF achievable.

5 So at least in that instance, you felt you had the
6 ability to insist that they provide manufacturer's
7 specifications for emission rates, didn't you?

8 CHAIRMAN RUSSELL: Does anyone have a
9 background in stoic geometry? Do you know what
10 those equate to in the same units that we're
11 dealing with?

12 MR. ROSSBACH: No.

13 CHAIRMAN RUSSELL: Do you know what they
14 equate to?

15 MS. SHROPSHIRE: What is DSCF?

16 THE WITNESS: Dry standard cubic foot.

17 So that's a relatively simple --

18 CHAIRMAN RUSSELL: So someone needs to
19 calculate --

20 MS. SHROPSHIRE: Actually it's a number,
21 grains, particle --

22 MR. ROSSBACH: It's not relevant to my
23 question.

24 MS. SHROPSHIRE: Number per volume.

25 CHAIRMAN RUSSELL: It could be very

1 relevant because of the efficiencies of a baghouse
2 to control the dust coming off the conveyor belt.

3 MR. ROSSBACH: That's a very good point.

4 MS. SHROPSHIRE: So the concentration
5 basically --

6 Q. (By Mr. Rossbach) I guess my question,
7 Eric, is: At least in this instance, you felt
8 that it was in your power and authority to insist
9 that they provide you with manufacturing
10 specifications for those emission rates; isn't
11 that true?

12 A. Not for PM2.5.

13 Q. Well, you asked them for emission rates?

14 A. Yes.

15 Q. You felt it was within your authority to
16 ask for emission rates?

17 A. Oh, absolutely.

18 MR. ROSSBACH: I don't have any other
19 questions.

20 MR. REICH: Mr. Chair, just before we
21 break, if Mr. Rossbach has no further questions, I
22 would ask that either a Board member or one of
23 Counsel be allowed to go through the State and
24 SME's contentions, so this is a fair proceeding,
25 because Mr. Rossbach has spent the last hour

1 cross-examining Mr. Merchant only on the unagreed
2 contentions of Petitioners, and it's entirely
3 unfair that you have a one-sided presentation of
4 the Petitioners' case through Mr. Merchant without
5 an opportunity both to cross-examine Mr. Merchant
6 on our contentions, as well as perhaps Mr. Taylor
7 up --

8 MR. ROSSBACH: Can I respond?

9 CHAIRMAN RUSSELL: I'm thinking that you
10 could, but I wonder if --

11 MR. ROSSBACH: But he hasn't even
12 started his case. He can do with his case
13 whatever wants to.

14 CHAIRMAN RUSSELL: Maybe it would be
15 more appropriate for you to go through DEQ and
16 SME's with your witness, and I will designate
17 someone on the Board to go through those.

18 MR. REICH: I'd happy to. I would also
19 point out that MEIC had already finished its case,
20 and now we're doing MEIC's case through Mr.
21 Merchant. I just don't think it's a fair process.

22 CHAIRMAN RUSSELL: Duly noted. If you
23 want to file anything on that, you certainly
24 could.

25 MR. REICH: I make my objection for

1 record. I may file something. I'm making my
2 objection for the record.

3 CHAIRMAN RUSSELL: Unless there is some
4 other Board members that would like to ask the
5 Department through Eric any further questions, or
6 maybe it's just Eric, do so now, because we will
7 be taking a lunch break here any moment.

8 MR. MIREs: I do have some just
9 clarifications for my ignorance.

10

11 EXAMINATION

12 BY MR. MIREs:

13 Q. Can you define for me what the
14 definition is of a nonattainment area?

15 A. Yes. It's pollutant specific, and the
16 example I'll use is particulate matter less than
17 ten microns, for example. PM10, an area,
18 generally an area anywhere in the US, let's say
19 Helena, for example, or let's use -- in this case
20 we'll use Missoula is a PM10 nonattainment area.
21 That means the level, the ambient concentration of
22 particulate matter less ten microns in the ambient
23 air that we breathe every day is higher than the
24 standard -- or has been documented to be higher
25 than the National Ambient Air Quality Standard for

1 that pollutant.

2 So at some point, it was monitored.

3 There was a violation of the ambient air quality
4 standard in that area. So it's not attaining the
5 standards. Helena, for example, would be in
6 attainment for that pollutant.

7 Q. Powder River coal, compared to other
8 fuels, how does this fit into the picture here?

9 A. It's got many different characteristics.
10 Coals have different characteristics.

11 Q. So what I understand then is if you
12 change the fuel from Powder River, if they went to
13 something else, then all of these scenarios that
14 we're talking about are going to change; is that
15 correct?

16 A. That's correct. Many aspects of these
17 scenarios, yes.

18 Q. Lower limits of this. There has been
19 referencing to a lot of lower limited permits in
20 the testimony here of different companies or
21 firms. Are these lower limited permitted firms,
22 are any of them actually built and operating?

23 A. Are we talking about filterable PM10 or
24 condensible?

25 Q. Yes.

1 A. Yes. And I believe there was testimony
2 yesterday related to that.

3 Q. Are they actually meeting the limits
4 that are stated within the permits, better, or
5 worse, or where are they at on those? Any idea?

6 A. My understanding is, based on the
7 information that's available to me, that one of
8 the facilities that was testified to yesterday,
9 the JEA facility, is meeting a lower limit for
10 filterable PM10. I believe that permit limit is
11 .011 pounds per million Btu.

12 Q. So we verify that these are not just
13 hypothetical concepts that out there in the permit
14 that you hope to attain, but that they are doable?
15 Thanks.

16 A. Mr. Mires, for the record, specific to
17 that project, yes.

18

19 EXAMINATION

20 BY MR. MARBLE:

21 Q. Powder River coal, what's the Btu per
22 pound?

23 A. Depending on the mine, I believe the
24 average is somewhere around 9500 to 9700 Btu per
25 pound, with the lowest -- Of the coals analyzed

1 for this project, the worst case scenario coal, I
2 thought it was the Absoroka Mine, and it was at
3 approximately 8,752 pounds per Btu.

4 Q. So I've been looking at the Deserit
5 information. They seems to me say that the higher
6 the Btu per pound, the higher -- the lower figure
7 you can attain for these emission rates. Like
8 they're using coal down there, they say it's 6,000
9 Btu per pound, and they apply -- unless I'm
10 reading it wrong -- but the higher the Btu's, the
11 lower attainment figure that you can expect.

12 A. Mr. Marble, members of the Board, it's
13 not as simple as that. There are many
14 characteristics that lead to -- and we're talking
15 about particulate matter here -- many coal
16 characteristics that lead to what the uncontrolled
17 load would be for particulate matter to the
18 control device: Ash content; the Btu rating; the
19 amount of coal that you would need to combust to
20 get the same amount of energy. There are several
21 factors that -- The amount of trace metals found
22 in a given coal source. There is a huge array of
23 coal characteristics, properties if you will, that
24 would lead to differing particulate load to the
25 control device.

1 Q. I'm looking at Page 63 of Exhibit 12,
2 and the second paragraph, the last sentence in the
3 paragraph, where they're talking, as I see it,
4 about the Btu content of the coal. They say
5 Deserit is going to use some waste coal down
6 there.

7 A. I'm sorry which --

8 Q. The last sentence in the second
9 paragraph.

10 A. (Examines document)

11 MR. REICH: Mr. Marble, which exhibit is
12 this?

13 MR. MARBLE: Page 63, Exhibit 12, second
14 paragraph, last sentence.

15 A. "Therefore, these facilities can
16 reasonably be expected to achieve a lower PM10
17 emission rate in pounds per million Btu than
18 Deserit's WCFU;" is that the sentence?

19 Q. That's what I was -- If you could tell
20 me what that means.

21 A. Without getting the full context here,
22 my assumption is that these other facilities would
23 be utilizing coal that's different than what
24 Deserit proposed, and therefore, those coals would
25 have a different load, would have different

1 characteristics leading to lesser uncontrolled
2 particulate emissions.

3 Q. But that seems to me to indicate that
4 you just can't take the 0.0012 -- whatever it is
5 -- figure from Deserit and say, "Well, that's all
6 we should have to do up here," because maybe we're
7 using better quality coal that should allow some
8 different figures. Am I off base on that?

9 A. Mr. Marble, members of the Board, that's
10 exactly what we did. We analyzed this specific
11 project, proposed coal, proposed unit, proposed
12 controls, to determine what the BACT emission
13 limit would be specific to this unit. We didn't
14 say -- this permit came out after ours, by the
15 way.

16 What we did was we analyzed this project
17 on a case-by-case basis, which is required for
18 BACT, and determined that the top control
19 technology for filterable PM10 was the fabric
20 filter baghouse at 99.85 percent control in this
21 specific case, and that resulted in -- based on
22 the uncontrolled emission rate for PM10, applying
23 that efficiency to it results in 0.012 pounds per
24 million Btu specific to this project.

25 Q. That's the same figure they ended up

1 with down there, too, isn't it?

2 A. It is.

3 MR. MARBLE: That's all the questions I
4 have.

5 CHAIRMAN RUSSELL: We will take a break.
6 The witness is dismissed. Thank you, Eric. I
7 appreciate your time and efforts. We'll take
8 right at an hour, so we'll start again at 12:40.

9 (Witness excused)

10 (Lunch recess taken)

11 CHAIRMAN RUSSELL: We're commencing
12 again. David's at the podium, so I'm guessing he
13 wants to talk to us.

14 MR. RUSOFF: The Department rests its
15 case.

16 CHAIRMAN RUSSELL: Thanks. It's SME's
17 turn.

18 MR. REICH: Mr. Chairman, if I might,
19 I'd like to mark this as Exhibit 8.

20 (SME Exhibit No. 8
21 was marked for identification)

22 CHAIRMAN RUSSELL: Do you have the
23 desire to mark it as --

24 MR. REICH: Joint exhibit SME/DEQ-8 --
25 not joint exhibit. Our individual exhibit.

1 (Witness sworn)

2 GARY McCUTCHEN,

3 called as a witness herein, having been first duly

4 sworn, was examined and testified as follows:

5

6 DIRECT EXAMINATION

7 BY MR. REICH:

8 Q. Would you state your name and address

9 for the record, please.

10 A. My name is Gary McCutchen. My business

11 address is 304-A West Millbrook Road, Raleigh,

12 North Carolina.

13 Q. Mr. McCutchen, I'm going to put in front

14 of you what's been labeled as DEQ and SME Exhibit

15 8. (Provides document) Mr. McCutchen, what is

16 that document that's been labeled for

17 identification as SME DEQ-8?

18 A. That's basically my resume.

19 Q. Does that resume contain a summary of

20 your education, work experience, and also cases in

21 which you've testified as an expert?

22 A. It doesn't specifically mention the

23 cases in which I've testified, but it does contain

24 my work experience.

25 Q. I believe if you look at the last three

1 pages of this document that's been marked as
2 Exhibit 8, you may see your record of testifying.

3 A. (Examines document) Yes.

4 Q. Do you see that? Okay. Is this a
5 reasonably up to date CV of your experience,
6 education, record of testifying, and articles
7 written?

8 A. Yes, it is.

9 CHAIRMAN RUSSELL: I've just glanced
10 through. It does look like a fairly comprehensive
11 CV. I know it's been real short. Do you have any
12 reason not to include this as Exhibit 8?

13 MS. DILLEN: It's fine to be an exhibit.

14 CHAIRMAN RUSSELL: Let's move to --

15 MR. ROSSBACH: So moved.

16 CHAIRMAN RUSSELL: It's been moved to
17 move this into the case exhibits. Is there a
18 second?

19 MS. KAISER: Second.

20 CHAIRMAN RUSSELL: It's been seconded by
21 Heidi. Any further discussion?

22 (No response)

23 CHAIRMAN RUSSELL: All those in favor,
24 signify by saying aye.

25 (Response)

1 CHAIRMAN RUSSELL: Opposed.

2 (No response)

3 CHAIRMAN RUSSELL: So it is in Exhibit

4 8.

5 (SME Exhibit No. 8

6 was received into evidence)

7 Q. (By Mr. Reich) Mr. McCutchen, if you
8 need to refer to your CV Exhibit 8 as you go
9 along, please do so, but I'm going to ask you a
10 series of questions about your background,
11 occupation, education, and briefly experience in
12 testifying. So we'll proceed. What is your
13 current occupation?

14 A. My current occupation is I'm a principal
15 with RTP Environmental, which makes me a
16 consultant in air pollution matters.

17 Q. Are you a licensed engineer?

18 A. Yes, I am.

19 Q. How many states are you licensed in?

20 A. Four different states.

21 Q. Which are?

22 A. North Carolina, South Carolina, Florida,
23 and Iowa.

24 Q. Could you briefly -- since the Board has
25 it in front of them -- just briefly go through

1 your education after high school, and the degrees
2 you've received.

3 A. Yes. I have a bachelor science in
4 chemical engineering from Virginia Tech; and a
5 master of science in chemical engineering from the
6 University of Kentucky.

7 Q. Again briefly, because the Board has the
8 document, could you relate your professional
9 experiences back to the time that you graduated
10 from college, being as brief as you can in
11 summarizing those.

12 A. Certainly. When I finished college, I
13 joined the US Public Health Service, and was
14 assigned to the National Air Pollution Control
15 Administration, which was the predecessor of EPA,
16 and worked on stack sampling methods, and doing
17 stack sampling in the development of standard and
18 referenced test methods, and determining
19 compliance with sources, until I went back for my
20 masters degree in 1970.

21 When I came back in 1971, I joined the
22 New Source Performance Standards Section, and was
23 responsible for dealing with the data and
24 information on the first five New Source
25 Performance Standards that were promulgated back

1 in the early 1970s; worked on various New Source
2 Performance Standards and priority lists for
3 setting these standards throughout the 1970s; and
4 in 1980 accepted a detail to the state of
5 Colorado, where I was Chief of the Engineering
6 Section, which was responsible for issuing all of
7 the air pollution permits for the state and other
8 engineering matters for the state agency.

9 I stayed in that detail for four years
10 and three more months, and was also responsible
11 during that time for developing and helping to get
12 promulgated the State New Source Review
13 Regulations for prevention of significant
14 deterioration.

15 When I returned to EPA in 1984, I joined
16 the New Source Review Section. Two years later in
17 1986, I became Chief of the New Source Review
18 Section, which was responsible, of course, for the
19 New Source Review Program nationwide. There were
20 approximately 75 to 100 agencies that were
21 implementing that program, and so we developed the
22 regulations, the policies, and the materials to
23 help these agencies implement the program, and to
24 provide guidance to our regional offices who were
25 implementing the program directly.

1 Q. Mr. McCutchen, when you say New Source
2 Review Program, does the New Source Review Program
3 include a PSD permit such as the one that's in
4 issue here?

5 A. Yes, it does.

6 Q. Continue.

7 A. Among the things that we did at that
8 time were: I ended up being the editor of the New
9 Source Review Workshop Manual, the 1990 draft,
10 which is still the one that is referred to, and
11 which includes the description of the Best
12 Available Control Technology process.

13 I chaired the Task Force on BACT, Best
14 Available Control Technology, for the
15 Administrator, and our task force developed the
16 approach called the top down BACT approach that
17 has been referred to already in this hearing. We
18 then were responsible for implementing that. I
19 prepared the first draft of the policy and
20 procedure that would be used in doing top down.
21 And then we began implementing this, and of course
22 there were challenges to it. That occupied a
23 great deal of time during that process.

24 I retired from EPA in 1992, and went
25 into consulting work, continued to work on the air

1 pollution field. I've prepared over 65 articles
2 for the Air Pollution Consultant during this time,
3 and several other articles, so about 70 articles
4 or so on air pollution matters; and continue to
5 work in the air pollution field in enforcement
6 matters, in helping obtain permits for sources,
7 and in doing training for various agencies and
8 private companies.

9 Q. What does your training consist of?
10 What are you trained in?

11 A. The training that we do right now
12 consists of a basic New Source Review course,
13 intermediate permitting course, which includes New
14 Source Review, which of course includes PSD; an
15 Advanced New Source Review training course; and a
16 separate BACT workshop that we developed at the
17 request of the one of the state organizations, the
18 organization of the midwestern states, CenSARA.

19 Q. Have you ever taught at a state
20 symposium in which representatives of the Montana
21 DEQ were present?

22 A. Yes. Among the New Source Review
23 courses we do provide are for WESTAR, which of
24 course is the fifteen western states organization.
25 Montana is a member of that group. It is able to

1 attend those workshops, and there had been Montana
2 representatives at several of those workshops.

3 Q. Have you had any experience with test
4 methods for PM, either in developing them, or
5 testing them, or applying them?

6 A. Yes, I have.

7 Q. Can you explain that.

8 A. When I first joined the National Air
9 Agency, there were no referenced test methods, and
10 in fact it reminds me somewhat of the situation
11 today, because there were five or six different
12 possible methods that had been developed for
13 testing for particulate matter, and none of those
14 results could be compared to the results of any of
15 the other test methods.

16 So EPA began developing a referenced
17 test method that eventually became Method 5, which
18 of course is still in use today for total
19 particulate, and is the basis for both the PM10
20 filterable and PM2.5 filterable portions of the
21 those two pollutants.

22 Q. As part of your work, now that you're in
23 the private side, have you used or reviewed any of
24 these test methods in connection with conducting
25 BACT analyses?

1 A. Yes, I have.

2 Q. Have you ever, you or anyone under your
3 supervision, performed a BACT analysis for any
4 type of facility?

5 A. Yes.

6 Q. About how many of those have you or
7 others under your supervision performed?

8 A. Probably somewhere over a dozen. I
9 don't know the exact number.

10 Q. I'm not talking about power plants. I'm
11 talking total.

12 A. That's probably in the teens. Sorry.
13 In the twenty or thirty range.

14 Q. In EPA, did you ever have the occasion
15 to review a BACT analysis?

16 A. Yes.

17 Q. What just briefly, in what context would
18 that have been?

19 A. In several contexts. One would be in --
20 Actually probably the most important was when we
21 would conduct audits of state agencies. I and
22 other members of my section would go to the state
23 agency, and pull out some PSD and minor source
24 permits at random, go through those, and evaluate
25 the different New Source Review aspects of that

1 permit, and whether we thought it was well done or
2 not. We would then audit the results, and present
3 those results to the state agency.

4 Q. Have you ever worked on a BACT analysis
5 for a power plant?

6 A. Yes.

7 Q. About how many?

8 A. That's around ten or so.

9 Q. Have you ever testified as an expert in
10 a case involving air permit regulation?

11 A. Yes, I have.

12 Q. About how many such cases have you --
13 Well, withdraw that. About how many cases have
14 you testified in in total?

15 A. Fifteen so far.

16 Q. Fifteen you've been involved in?

17 A. Yes.

18 Q. Did you actually testify in all fifteen?

19 A. No. Eight out of the fifteen involved
20 actual testimony; and the rest involved an expert
21 report, or affidavit, or other expert documents.

22 Q. And are those litigations set forth at
23 the last few pages of Exhibit D?

24 A. Yes, they are.

25 Q. And have you ever testified on issues

1 involving the application of BACT?

2 A. Yes. Two out of the times that I've
3 provided testimony were on BACT, and one of the
4 expert reports that did not involve testimony
5 involved BACT issues.

6 Q. And in what fields were you qualified as
7 an expert in the cases that you've just listed?

8 A. I may not remember all of these, but as
9 an NSR expert.

10 Q. That's New Source Review?

11 A. New Source Review expert; permitting
12 expert on the permit policies and regulations;
13 BACT process.

14 Q. Have you ever testified in Montana?

15 A. Yes, I have.

16 Q. Was that in front of this BER?

17 A. No. It was in front of Ms. Orr, the
18 Board attorney.

19 Q. But you testified in a contested
20 proceeding before Ms. Orr?

21 A. Yes.

22 Q. What was the name of that proceeding?

23 A. That was the one on Thompson River
24 Cogeneration.

25 Q. As far as you know, was that a

1 proceeding pending in front of the Board of
2 Environmental Review?

3 A. I believe that it was.

4 Q. Were you qualified as an expert in that
5 case?

6 A. Yes, I was.

7 Q. Do you recall how you were qualified in
8 that case?

9 A. I believe as an NSR New Source Review
10 expert, and I don't recall what else.

11 Q. Were you qualified as an expert in BACT?

12 A. Yes, I believe so.

13 Q. What about in PSD permitting?

14 A. Yes.

15 Q. As part of the BACT analyses that you've
16 worked on or reviewed, was it necessary to
17 evaluate applicable technology, including for
18 particulate matter?

19 A. Yes.

20 Q. And as part of that analysis, was it
21 necessary to evaluate various test methods for
22 demonstrating compliance with PM standards?

23 A. The methods used for compliance have to
24 go hand in glove with the emission limits that are
25 set.

1 MR. REICH: At this point, I move to
2 have Mr. McCutchen qualified as an expert in the
3 areas of BACT analysis; EPA policies with respect
4 to BACT analysis; EPA policies with respect to New
5 Source Review Program, including the PM2.5 program
6 test methods; and generally areas of NSR
7 permitting and implementation.

8 MS. DILLEN: I object just insofar as I
9 don't understand the last category of expertise
10 Mr. Reich has identified.

11 MR. REICH: NSR permitting and
12 implementation. Those are two categories.

13 MS. DILLEN: I heard you to say
14 something last which seemed to incorporate what
15 you had said before, so I'm wondering what you
16 meant by it.

17 MR. REICH: Why don't I just repeat it.

18 CHAIRMAN RUSSELL: The last one, because
19 I had a question on that.

20 MR. REICH: I had talked about NSR
21 permitting and NSR program implementation. I'm
22 referring to his -- primarily based on his
23 experience at EPA, and also based on the fact that
24 he keeps up on those issues.

25 MR. ROSSBACH: Well, I would move the

1 admission of accepting him as an expert in the
2 general topics described, with the caveat that
3 there is a pending motion, a motion in limine with
4 regard to testimony on calling for a legal
5 conclusion; and with the understanding that I'm
6 not accepting him necessarily to testify about
7 matters that would otherwise require a legal
8 conclusion.

9 MR. REICH: For the record, we don't
10 intend to offer him to testify as to legal
11 conclusions. We will offer him to testify about
12 how he's evaluated policies, EPA policies, and so
13 forth, both at EPA and in the context of doing
14 BACT analysis.

15 MR. ROSSBACH: I understand, and that's
16 my caveat. At a certain point, EPA policies start
17 sounding like legal conclusions. I have no
18 problem generally with his expertise. I'm
19 impressed with his resume. I'm interested in some
20 of the cases he's testified to. I do want to be
21 sure that we're careful about that.

22 MR. REICH: I'll try to be careful, and
23 I'm sure my fellow Counsel will object at the
24 appropriate time if I'm not.

25 MR. MARBLE: Second.

1 CHAIRMAN RUSSELL: It's been seconded by
2 Don. Any further discussion?

3 (No response)

4 CHAIRMAN RUSSELL: Hearing none, all
5 those in favor, signify by saying aye.

6 (Response)

7 CHAIRMAN RUSSELL: We consider you an
8 expert in the matters that were pointed out to us.

9 Q. (By Mr. Reich) Mr. McCutchen, I'm going
10 to ask you a series of questions, some of which
11 has been covered, aspects of which have been
12 covered in this proceeding. And you've been
13 sitting in the proceeding; am I correct?

14 A. Yes.

15 Q. Mr. McCutchen, first of all, are you
16 familiar with the EPA surrogate policy for PM2.5
17 that we've been discussing in the last several
18 days?

19 A. Yes, I am.

20 Q. What is your understanding of why EPA
21 recommended a surrogate analysis as opposed to
22 having sources do a direct PM2.5 analysis?

23 A. EPA felt that they did not have the
24 tools available to do direct PM2.5 analyses at the
25 time, and so allowed -- and so developed the

1 policy of using PM10 as a surrogate.

2 Q. Is that policy in effect today?

3 A. Yes, it is.

4 Q. What are the tools that EPA was
5 concerned had not been developed, and are still
6 not developed, in order to do a PM2.5 specific
7 analysis, BACT analysis?

8 A. Well, the absolute core and basic tool
9 is test methods that are reliable and repeatable.
10 Without the test methods, then you also don't have
11 emission factors, you don't have emissions
12 inventories that would allow an air agency to do
13 air quality management, and ensure attainment and
14 maintenance of standards. A lot of this all boils
15 down to: Do we have information on the emissions?
16 And without the proper test method, you don't have
17 that information.

18 Q. We'll get to emission factors in a
19 second. There was some discussion of that
20 earlier. Are there other aspects of the PSD
21 program, perhaps not specifically related to BACT,
22 that also are not fully developed, according to
23 EPA?

24 A. Yes. EPA has continued to move forward
25 in trying to get the program shifted from PM10

1 over to PM2.5, and has recently proposed not only
2 the significance levels that were proposed back in
3 2005 for PM2.5, but also proposed significant
4 impact levels, and PSD increments, and a number of
5 the other values that are needed for doing the
6 ambient impact analyses.

7 Q. Why is an ambient analysis important in
8 the PSD context?

9 A. The ambient impact analysis is the
10 second of the two core parts of the PSD program.
11 The first is ensuring that good control technology
12 is put on, in fact, the Best Available Control
13 Technology is put on; and then the second part of
14 the analysis, and the key to ensuring that public
15 health is still protected -- both public health
16 and welfare -- is the series of impact analyses of
17 for whether the National Ambient Air Quality
18 Standards could be exceeded; whether the
19 increments would be exceeded; whether there are
20 impacts on soils, vegetation, or visibility; and
21 whether there are adverse impacts on Class 1
22 areas, our national parks and recreation areas.

23 Q. Are any of those tools currently in
24 final form today?

25 A. For PM2.5, they are not.

1 Q. And you said PSD increment. What's a
2 PSD increment?

3 A. A PSD increment is a measure of the
4 amount of deterioration that has occurred in an
5 area from some baseline, and you again have to
6 know what the baseline is in terms of the
7 emissions.

8 Q. Are there PSD increments in place for
9 NOx?

10 A. Yes.

11 Q. SO2?

12 A. Yes.

13 Q. Ozone?

14 A. No.

15 Q. VOC?

16 A. No.

17 Q. Is fair to say that there are PSD
18 increments in effect for all the criteria
19 pollutants other than PM2.5?

20 A. There are PM10 increments in place only
21 for PM10, and NOx, and SO2.

22 Q. Mr. McCutchen, you've testified that
23 you've reviewed and had performed under your
24 supervision a number of BACT analyses. In doing a
25 BACT analysis, is it important to have an emission

1 inventory, or let's call it emission factors for
2 uncontrolled emissions from the source, potential
3 uncontrolled emissions from the source?

4 A. I don't usually term it emission
5 factors, although I realize that's a term that's
6 been used, I think as a matter of choice, during
7 the hearing here. But you need the emissions
8 rates that are anticipated from that unit.

9 Q. Why is that important in doing a BACT
10 analysis?

11 A. Well, you need it in several ways. You
12 need an emission rate without controls, so you
13 know what the uncontrolled emissions are; and you
14 need some idea of what the emission rate is going
15 to be after the controls, so that you can get an
16 idea of the control efficiency of the control
17 devices. You need to control efficiency to be
18 able to rank the control devices under the top
19 down BACT approach, from the most stringent, the
20 one that controls the best, down to the lesser
21 controlled levels.

22 Q. But by reference to the top down BACT
23 analysis -- and there is a chart behind you if you
24 need to point it out -- which of the steps that's
25 important to have the emission inventory for

1 before you can start the BACT analysis? You can
2 point to the chart, or you can just refer to the
3 steps.

4 A. You need it at least by Step 3, which is
5 the ranking of the control options that remain.

6 Q. So from Steps 3 on at least, you need
7 the emission inventory to do a proper BACT
8 analysis?

9 A. Yes.

10 Q. Are you aware of any emission
11 inventories for PM2.5 for coal fired plants, that
12 is, emissions inventories other than emissions
13 inventories developed through the surrogate
14 analysis?

15 A. I'm not aware of any specifically for
16 PM2.5 emission rates.

17 Q. Are you aware of any states that have
18 set limits for PM2.5 specifically in a power plant
19 permit?

20 A. No, I'm not aware of any.

21 Q. You heard Mr. Taylor testified earlier
22 that if he just called up a vendor of a boiler, he
23 thought he could get emissions factors for PM2.5.
24 Does that match with your experience?

25 A. No, it does not.

1 Q. Could you explain.

2 A. Yes. I will try to keep this short.

3 There are several problems built into that in
4 forming the basis for my disagreement. The first
5 is that since we don't have referenced test
6 methods, we'd have to find out how exactly the
7 manufacturer or vendor of the equipment managed to
8 do the testing, in other words, what test methods
9 did they use to determine whether this was PM2.5.
10 Very often what you find out is that they're using
11 some sort of general factor to convert over, or
12 there are some other problems.

13 And the difficulty then in comparing
14 this is: Without a referenced method, different
15 manufacturers may have used different test
16 methods, and you can't directly compare those. So
17 your information is useless in terms of trying to
18 compare these control devices.

19 And if you're talking about control
20 devices, control device vendors, there are
21 additional problems. If you're talking about the
22 equipment manufacturers, like the boiler, I've
23 covered the main problems.

24 Q. In your opinion, are there reliable
25 emissions inventories for PM2.5 for power plants

1 today?

2 A. No, there are not.

3 Q. Is that for the reasons you just
4 mentioned?

5 A. Yes.

6 Q. If you were able to obtain reliable
7 inventory information for PM2.5, is there anything
8 else you would need in the hypothetical case that
9 you're representing a client that's doing a BACT
10 analysis for a power plant? If you had the
11 emissions inventories for PM2.5 that you've
12 indicated are lacking, would there be other things
13 that you would need from the vendor in order to
14 rely on those emissions inventories in doing a
15 BACT analysis and setting an emission limit?

16 A. I assume that you mean a controlled
17 equipment vendor?

18 Q. Or a boiler manufacturer, control
19 equipment vendor, yes.

20 A. If it's a vendor, you would certainly
21 want a guarantee of the levels of emissions that
22 they feel like they could collect, or that would
23 be emitted on the other side of the control
24 device; and you'd have to make sure that it's
25 worded very carefully, because sometimes the

1 guarantees don't have any significant financial
2 penalty associated with them, so the vendor simply
3 isn't that worried about having to meet the limit
4 that they feel like can be met.

5 Then there are other pitfalls in trying
6 to rely straight forward on vendor information.
7 The main problem with the vendors of the actual
8 emissions units is, again, that you have to make
9 sure that the test methodology is correct and
10 comparable. And the whole test methodology for
11 PM2.5 and for condensibles, both in PM10 and in
12 PM2.5, is just in disarray right now.

13 Q. Not Deserit, not like the permit?
14 Disarray?

15 A. No. Disarray.

16 Q. Without the emission inventories, and
17 without a guarantee from a vendor of control
18 equipment, if you were doing a BACT analysis for a
19 power plant, would you be able to carry forward
20 with that BACT analysis for PM2.5?

21 A. Could you repeat that question?

22 Q. That was a tough question. If you
23 didn't have the emission factors for PM2.5, which
24 you said don't exist, and if you didn't have a
25 guarantee from a vendor that it could meet certain

1 permit limits, would you be able to do a BACT
2 analysis for PM2.5 for a power plant?

3 A. No.

4 Q. Can you give an example of where someone
5 has been able to obtain emissions inventory
6 information from a vendor, but there was no
7 guarantee attached, and whether that made a
8 difference?

9 A. I have been in situations like that,
10 both on the regulatory side and as a consultant,
11 assisting and in getting permits; and in both
12 cases, there is some concern about non-guaranteed
13 values. When I was with EPA in Colorado, the
14 concern was that if the vendor isn't obligated to
15 actually meet the level that they say they're
16 going to meet, we can end up with an ongoing
17 enforcement problem, and a real public relations
18 problem, if the limit that we've improved has to
19 be relaxed.

20 In the role as consultant for a proposed
21 source, the situation is even more bleak, because
22 they are, at least for a certain period of time,
23 in violation of a limit that's been given them, if
24 it turns out that the level that the vendors said
25 they could meet is not meetable.

1 Q. Did you have an experience with a
2 situation where a vendor gave out emissions
3 information?

4 A. Yes, I did.

5 Q. Could you explain that.

6 A. This was an occasion when we were
7 working for the source. It was a cement plant up
8 in New York that was being proposed. One of the
9 groups that was opposing the permit had called
10 several vendors, and it had gotten quotes from the
11 vendors for the level of control that could be met
12 for the pollutant that we were looking at.

13 When we went back to those vendors with
14 the detailed information about the characteristics
15 of the gas stream, none of the vendors would
16 provide a guarantee of that level. In fact, two
17 of them refused to even submit a bid on -- they
18 were non-responsive on it.

19 The problem that we all face here with
20 vendors providing information is that unless they
21 think they're going to be able to sell a device,
22 they really aren't going to spend a whole lot of
23 time on the level of detail that it takes to
24 understand what the gas stream looks like, and
25 what kind of problems that that creates for that

1 specific source. So the information I get is very
2 offhand information.

3 Q. Mr. McCutchen, turning to another
4 subject, you've heard some testimony in this
5 proceeding about test methods for PM2.5. Are
6 there any referenced test methods to test PM2.5
7 emissions that could be used to develop this
8 inventory emission data that you spoke about?

9 A. No. There is a proposed method for the
10 filterable portion of PM2.5 that is based, like
11 the PM10 filterable is, on the Method 5 sampling
12 train for the condensible portion --

13 Q. Just sticking with filterable, is that
14 Method 39?

15 A. I'm trying to remember if it's Method 39
16 or --

17 Q. You can consult the book. I'll get you
18 the exhibit number.

19 A. Okay.

20 MS. DILLEN: Exhibit No. 39 is -- I
21 believe it's "Q," I think.

22 A. (Examines document) Yes, Conditional
23 Method 39.

24 Q. (By Mr. Reich) That's a conditional
25 test method for filterables?

1 A. Yes.

2 Q. Is it a referenced method?

3 A. Not yet.

4 Q. Is there a referenced method for
5 condensible PM2.5?

6 A. There is. Method 202 collects the
7 condensibles, and that method is the same for PM10
8 and for PM2.5, the way EPA so far has defined
9 PM2.5. The problem is that EPA has acknowledged
10 that Method 202 has problems with it, and it's not
11 as replicable and repeatable as they once thought
12 it was. They're getting results that they think
13 is from SO2, but they aren't certain.

14 So they have a task force, and a group
15 of people headed up at EPA by Ron Meyers, who are
16 trying to resolve the problems with this, with the
17 help of industry and outside testers, to come up
18 with a condensible method that is workable. So
19 all of the results of Method 202 for condensibles
20 are now in doubt because of these anomalies that
21 they've acknowledged.

22 Q. That's a referenced method?

23 A. Yes, it is a referenced method.

24 Q. Is there a conditional method for
25 condensibles that EPA is considering?

1 A. Yes. The EPA is considering two
2 approaches. One is the Conditional Test Method
3 40, which is an approach that would look at -- I
4 believe it's Test Method 40. Would that be "R"?

5 MS. DILLEN: Yes.

6 A. (Examines document) And I believe
7 that's the dilution approach, which would get all
8 of the PM2.5, both filterable and condensible,
9 which is an interesting sounding approach. I find
10 that very intriguing, because what it's supposed
11 to do is to basically take the stack gas to
12 ambient temperatures, so you see what condenses
13 out. And so you get the condensible material and
14 the filterable material all in the same filter,
15 and you don't have all of the concerns about the
16 anomalies collected in the impingers during the
17 normal condensible Method 202 approach. So it has
18 some promise on that.

19 The other approach is to continue with
20 Method 202 for condensibles alone, and do what EPA
21 calls a nitrogen purge to try and get out the
22 anomalies that have occurred in there through what
23 they suspect again is SO2 forming sulphates.

24 Q. How would you describe the state of the
25 testing methods for PM2.5 at this point?

1 A. Those are still being tested and
2 evaluated by EPA and other people working with
3 EPA.

4 Q. So there is no final referenced method
5 other than method 202 that you described as having
6 problems? No other final method?

7 A. That is correct.

8 Q. Have the availability of these
9 conditional methods that you just discussed led to
10 the development of reliable emission inventories
11 for PM2.5?

12 A. No, they have not yet. And part of
13 problem seems to be that EPA is getting some data
14 developed by volunteer groups and by other means,
15 but only a very limited number of types and
16 sources, and there simply isn't enough information
17 yet to develop reliable estimates on a source
18 that's being proposed. I don't doubt that this is
19 going to eventually come about, but part of the
20 problem is that no one knows where to sink their
21 money in. All these tests cost a considerable
22 amount of money, and most industrial sources are
23 not particularly keen on going out and just
24 spending money on a test that may never become a
25 referenced method, so the data are useless to

1 them.

2 Q. And that's why the community is not
3 getting reliable emissions inventories, because
4 the sources are reluctant to test, because the
5 test method may end up not being one that's being
6 produced --

7 MS. DILLEN: Objection, leading.

8 MR. REICH: I'm sorry. It is leading.
9 I'll withdraw the question.

10 Q. (By Mr. Reich) What is the concern that
11 sources have in not using these conditional test
12 methods?

13 A. I am reading between the lines on this,
14 but I think it is because the sources simply don't
15 want to put the money into these test methods
16 until they know the data will be useful.

17 Q. You testified earlier that while at EPA,
18 you were involved with or familiar with another
19 test method situation involving PM. How long did
20 it take before EPA sorted that out, and got an
21 effective references test method for PM?

22 A. The leading force behind developing
23 Reference Test Method 5 -- which is still the kind
24 of gold standard for just straight particulate --
25 was Walt Smith, and he worked on developing a test

1 method out of kind of an aggregate of the four or
2 five or six methods that were out there already
3 for approximately eight to ten years before that
4 finally became a Referenced Test Method that EPA
5 began insisting using on, and began developing
6 data on. And from there, things flowed pretty
7 well.

8 Q. Was that test method situation more
9 complex or less complex than the PM2.5 test method
10 situation?

11 A. It had the potential to be more complex
12 because we were collecting condensibles even then
13 in that test method before it became a referenced
14 method. But based in part on the data I analyzed
15 for the first NSPS for power plants, EPA ended up
16 dropping the condensible portion of the Method 5
17 sampling train from the NSPS standards until they
18 could better understand it, and that then became
19 just a straight, "Pull in the gas, run it through
20 a filter, and whatever collects on the filter," so
21 that became much simpler than what we have now.

22 Q. And that took eight to ten years to
23 develop?

24 A. Yes.

25 Q. Just for the record, what is NSPS?

1 A. New Source Performance Standards. Those
2 are nationwide standards that every new source or
3 modified source has to meet once they're
4 established.

5 Q. Let me turn to another subject. You
6 heard Mr. Taylor testify, and you heard some
7 questions to Mr. Merchant about a so-called
8 membrane filter; do you recall that?

9 A. Yes, I did.

10 MS. DILLEN: Objection. I don't believe
11 that Mr. McCutchen has been qualified as an expert
12 control technology, and certainly has not
13 submitted any materials on control technology in
14 his expert report.

15 MR. REICH: I wasn't trying to qualify
16 him as an expert on control technologies. I
17 equalled him as an expert on BACT; and as an
18 expert on BACT he would have to evaluate control
19 technologies, just as Mr. Merchant did in
20 evaluating the BACT analysis of SME. That's the
21 only purpose I'm going down this line of
22 questions.

23 MR. ROSSBACH: Move to overrule the
24 objection.

25 CHAIRMAN RUSSELL: Is there a second?

1 MS. KAISER: Second.

2 CHAIRMAN RUSSELL: It's been moved and
3 seconded. All those in favor, signify by saying
4 aye.

5 (Response)

6 CHAIRMAN RUSSELL: Objection is
7 overruled.

8 Q. (By Mr. Reich) So I asked if you're
9 familiar with a membrane filter. You heard the
10 testimony about the membrane filter, yes?

11 A. I did hear that.

12 Q. Have you had any occasion to do any
13 investigation about a membrane filter?

14 A. I have, to a limited extent.

15 Q. Have you read any reports about membrane
16 filters?

17 A. Yes, I have.

18 Q. Are such membrane filters currently in
19 use at any utility power plant as a primary
20 control device for PM2.5?

21 A. Not that I'm aware of.

22 Q. Have you ever evaluated membrane filters
23 as part of a BACT analysis for a power plant?

24 A. No, I have not.

25 Q. Just to clarify, when you do a BACT

1 analysis, the first step is to identify all top
2 level technologies; is that correct?

3 A. Yes.

4 Q. What is the result of your limited
5 investigation of membrane filters, if you could
6 just summarize that?

7 A. Membrane filters sound like a promising
8 lead to explore. There however had been some
9 reports of some of the early efforts to do at
10 least pilot plant sized studies of membrane
11 filters, and they have reported some problems,
12 particularly with pressure drop across the
13 membrane, so severe that the facility that tried
14 it out, with money in part from the Department of
15 Energy, took out all of the membrane filter bags,
16 and replaced those with pulse jet fabric filter
17 bags.

18 Q. What facility was that?

19 A. That was the Ottertail facility.

20 Q. Where is that located?

21 A. I don't recall offhand.

22 Q. One of the Dakotas?

23 A. Oh, yes, it's --

24 Q. It doesn't matter.

25 A. I believe it's owned in part by both a

1 Montana utility and a North Dakota utility. I
2 believe it's in the west here.

3 Q. Mr. McCutchen, when you do a BACT
4 analysis, a typical BACT analysis, what are the
5 types of control technologies that you consider in
6 the Step 1 of the BACT analysis?

7 A. In Step 1, where you're pulling in all
8 of the different possible control technologies,
9 you look at everything out there that's available,
10 including technologies that have been used to meet
11 LAER limites. You're not limited to the United
12 States. You start with, as I think other people
13 have testified, with the RACT/BACT/LAER
14 Clearinghouse, and you proceed from there with all
15 of the other technologies that you're aware of,
16 and you just start listing them, like fabric
17 filters, electrostatic precipitators, and so on.

18 Q. And what does EPA consider to be
19 available, in your understanding of doing a BACT
20 analysis?

21 A. "Available" means that it's both
22 commercially available -- in other words, a source
23 can go out and purchase the control device -- and
24 that it has been proven out on a full scale
25 operation at the scale or level that the source

1 needs to use it at. In other words, just because
2 something at the bench scale or pilot plant level
3 works, doesn't mean it's going to work on a full
4 scale. That was one thing hammered into us when I
5 was in college studying chemical engineering. You
6 never expect to scale up without problems.

7 Q. If you were doing a BACT analysis at the
8 time the SME did the BACT analysis for the
9 Highwood Generating Station facility, would you
10 have considered a membrane filter to be an
11 available technology for purposes of Step 1 of the
12 BACT?

13 A. No.

14 Q. Why is that?

15 A. I would have classified it as a
16 developing technology, kind of somewhere between
17 the R&D and pilot plant stage. That Ottertail
18 study moved up fairly high in terms of the size of
19 the facility, and had it been successful, that
20 would have been a very good indicator that full
21 scale capability -- that it would have had full
22 size or scale capabilities. But it did not,
23 according to the report.

24 Q. And you indicated that the report
25 indicated that there was a pressure drop. What's

1 the effect of the pressure drop on the potential
2 efficiency of the plant, the coal fired plant?

3 A. Pressure drop basically means that you
4 need more fan power to pull the air through the
5 membrane filter. They didn't have problems with
6 that at first, but then it began building up
7 inexplicably. That was using Powder River coal,
8 also burning some soybeans and corn. They thought
9 that might have been the problem to begin with.

10 They explored other things, including
11 reducing the load into the membrane. But with
12 that pressure drop, much higher than normal across
13 a baghouse, the facility indicated that it was
14 going to have an energy penalty of as much as the
15 equivalent of 55 megawatts of the power produced
16 just to run the baghouse.

17 Q. And that's why you would consider the
18 membrane bag not to be available?

19 A. Yes.

20 Q. Switching to another technology that Mr.
21 Taylor described, did you hear his testimony about
22 his technology of first choice, that is, a
23 membrane filter followed by wet ESP?

24 A. I believe that I did hear that mentioned
25 as a first choice. I wasn't clear whether there

1 was any control for particulate in front of that,
2 but I did hear those two items as part of the
3 control train.

4 Q. Membrane filter then wet ESP?

5 A. Yes.

6 Q. Have you ever seen this combination used
7 in a power plant?

8 A. No.

9 Q. Have you ever recommended this
10 combination in any BACT analysis you've performed
11 for PM control at a power plant?

12 A. I've never recommended a membrane filter
13 obviously, based on what I just mentioned as we
14 just covered that. Wet ESP has been a part of
15 some combinations or as the stand alone. We've
16 never, to my remembrance, added on a wet ESP after
17 the normal combinations -- I shouldn't say normal
18 -- but the usual or typical combinations of
19 particulate control devices.

20 Q. Since you don't consider the membrane
21 filter to be an available technology, have you
22 ever seen a combination of a fabric filter and a
23 wet ESP in use at a power plant?

24 A. Not that I'm aware of.

25 MS. SHROPSHIRE: Could you repeat that

1 last question, please.

2 Q. (By Mr. Reich) Have you ever seen the
3 use of a combination of a fabric filter and a wet
4 ESP for PM control at a power plant?

5 A. The answer was no.

6 Q. Have you ever recommended to a client
7 that it put that combination together, that is, a
8 fabric filter followed by a wet ESP for PM
9 control?

10 A. No.

11 Q. Why is that? Why haven't you made that
12 kind of recommendation?

13 A. Well, there is a fairly well known
14 phenomenon in dealing with BACT, that as you put
15 on a control device -- which what you do is
16 assuming it's a good control device -- you
17 tremendously decrease the tons of emissions that
18 are coming, that pass through that control device.

19 So when you get to a second control
20 device, or even a third one, or as many as you
21 want to try, what happens is these control
22 devices, since they're generally trying to treat
23 the same volume of air as the first control device
24 but a lower concentration of the pollutant, you
25 end up with exponentially higher cost

1 effectiveness numbers. Cost effectiveness is the
2 annualized dollar cost for the control device
3 divided by the tons per year of pollutant that you
4 collect.

5 And so if you have less pollutant in the
6 gas stream that you're treating, and it costs as
7 much as the -- almost as much as the first control
8 device, the amount of pollutant you can collect
9 and use in your denominator is much smaller, and
10 so your dollar per ton value goes way up.

11 An example is the Deserit permit that's
12 been referenced before, where they did look --
13 even though I haven't -- at a wet ESP following a
14 fabric filter, and it's almost intuitive, and the
15 reason we don't really tend to do these series of
16 analyses in BACT, the cost effectiveness of a wet
17 ESP following a fabric filter was from a low of
18 \$25,000 per ton to a high of \$175,000 per ton.
19 And most of the thresholds that we see --

20 CHAIRMAN RUSSELL: Per ton of what?

21 THE WITNESS: Per ton of particulate
22 matter. PM10 in this case. Deserit used PM10.

23 Q. (By Mr. Reich) Just to clarify for the
24 Chairman, do you mean ton of particulate matter
25 removed?

1 A. Yes, per ton removed by that control
2 device. And most of the cost effectiveness
3 thresholds that we see across the contamination
4 range between \$2,000 and \$5,000 a ton as being
5 above that being not cost effective for most
6 agencies.

7 Q. Is cost effectiveness one of the
8 considerations in a BACT analysis?

9 A. Yes, it is.

10 Q. What step is that?

11 A. That's in Step 4, evaluating the energy,
12 environmental, and economic impacts. And of
13 course, I don't think it's any secret that
14 applicants find the economic impact the most
15 interest to them, and the most important in trying
16 to make a case to the agency that the top level
17 should be rejected, so that they can then go down
18 to the next level of control.

19 The way top down works, as I think
20 you've heard before, is that by making the source
21 begin with the top ranked level of control --
22 which was EPA's idea behind the top down approach
23 in the first place -- what we're doing is forcing
24 the source to provide all of the information that
25 the agency reviewer -- in this case Mr. Merchant

1 -- needs to know whether he or she agrees or
2 disagrees with rejecting that level of control.

3 And in this particular case, Mr.
4 Merchant, with the information made available to
5 him, obviously did not agree with rejecting the
6 top level of control on the fabric filters, so --

7 Q. If you had been the consultant on this
8 particular project, and you were presented with
9 the option of pairing a fabric filter with a wet
10 ESP, would you have considered that as part of
11 your BACT analysis?

12 A. (No response)

13 Q. Would you have considered it as a final
14 control in your BACT analysis?

15 A. A wet ESP, no, I don't think so. Not
16 after a fabric filter.

17 Q. Why is that?

18 A. Because that would then be basically
19 controlling for particulate in series, and you
20 just set yourself up for the high cost
21 effectiveness numbers.

22 Q. So it would fall out of cost
23 effectiveness?

24 A. Yes. If a state asked us to do that
25 analysis, we would do it, but I can pretty much

1 tell you what the numbers would show.

2 MR. SKUNKCAP: Can you state that
3 question again and explain that again.

4 MR. REICH: Maybe we can have that read
5 back because I'm not sure.

6 COURT REPORTER: "If you had been the
7 consultant on this particular project, and you
8 were presented with the option of pairing a fabric
9 filter with a wet ESP, would you have considered
10 that part of your BACT analysis?"

11 THE WITNESS: No, I wouldn't have, in
12 part because we don't normally just add on control
13 devices for the same pollutant one after another,
14 because we generally know how that's going to turn
15 out. As I mentioned, we would have done so had
16 the state asked us to do so, but that's --

17 As EPA determined in the Deserit
18 analysis that they did, those cost effectiveness
19 numbers for a second control device following a
20 first one for the same pollutant are generally not
21 cost effective. So we would generally not take
22 that step, and it essentially is wasted work
23 because it ends up being rejected in Step 4, and
24 that's just more for the agency to review.

25 MR. SKUNKCAP: Thank you.

1 MR. REICH: Does that answer your
2 question?

3 MR. SKUNKCAP: Yes.

4 Q. (By Mr. Reich) Mr. McCutchen, you heard
5 Mr. Taylor testify hypothetically that if the
6 limit of .012 was dropped to .01, that you might
7 get a particular control leading to about eleven
8 tons of additional removal; do you remember that?

9 A. This was the pound per million Btu
10 number dropping from .012 to .011 --

11 Q. Yes.

12 A. -- which was another one of the values
13 that were on the list of other sources.

14 Q. Right.

15 A. And that converts over to about eleven
16 tons per year.

17 Q. So that's just a mathematical
18 calculation?

19 A. Yes.

20 Q. And do you know how much uncontrolled
21 PM10 including condensibles would have been
22 emitted at the Highwood Generating Station if they
23 didn't have any controls?

24 A. Yes. Somewhere on the order of 75,000
25 to 90,000 tons per year.

1 Q. And do you know how much total PM
2 including condensibles will be emitted from the
3 Highwood Station with controls?

4 A. Approximately, if I'm remembering right
5 from the permit, approximately 140 tons per year
6 of filterable PM10, and about 160 tons per year of
7 condensible PM10 would be emitted after the
8 control device was selected.

9 Q. Could you repeat those numbers.

10 A. About 140 tons per year of filterable
11 PM10, and about 160 tons per year of condensible
12 PM10.

13 Q. You heard a question earlier from
14 Commissioner Rossbach, in which he repeated the
15 statement in the pretrial memo to the effect that
16 the condensibles emitted from the Highwood station
17 would be the vast majority of the particulate
18 matter emitted; do you remember that question?

19 MS. DILLEN: Objection. I believe
20 that's misstating the statement that was read.

21 MR. ROSSBACH: I think it was the PM2.5,
22 not necessarily condensibles. Page 5, No. 4.

23 MR. REICH: Withdraw the question.

24 Q. (By Mr. Reich) Is about half,
25 approximately half of the PM that would be emitted

1 by the Highwood Station condensible PM?

2 A. A little more than half.

3 Q. Given your testimony that the
4 uncontrolled amount of PM from Highwood is about
5 75,000 to 900,000 tons, and the facility is
6 getting down to about 300 tons of PM from the
7 75,000 and 90,000 tons, are you able to calculate,
8 from what you know from the application and
9 submittals, are you able to calculate a cost per
10 ton removed for those eleven tons that Mr. Taylor
11 referred to?

12 A. Not offhand, no. I imagine that you
13 could by looking at the difference between the
14 costs of the control device.

15 Q. Was there a similar analysis in the
16 Deserit permit?

17 A. Not for a membrane fabric filter. There
18 was for a wet ESP following a fabric filter.

19 Q. And what was that cost again?

20 A. The cost of controlling the additional
21 pollutant there, which was about 100 additional
22 tons from the Deserit, was from \$25,000 per ton to
23 \$175,000 per ton. They used a low, medium, and
24 high estimate, so that they could bracket the
25 range of values.

1 Q. Using that hypothetical that Mr. Taylor
2 responded to with respect to the eleven tons, if
3 you went down .001 I believe in terms of a limit,
4 would that lead to an incremental increased cost
5 to get to that eleven ton reduction?

6 A. Going down --

7 MS. DILLEN: Objection. I think this is
8 calling for speculation.

9 MR. REICH: I don't think any more
10 speculation than what Mr. Taylor was doing.

11 MS. DILLEN: I'm unclear then what the
12 hypothetical is.

13 MR. REICH: Mr. Taylor testified that if
14 you go down .001 in terms of pounds per million
15 Btu just doing a straight calculation, you get
16 about eleven tons of removal.

17 MS. DILLEN: Yes, but I understand
18 you're asking how much that could cost, and I
19 don't know that we have any -- there is no data of
20 costs before anyone here.

21 MR. REICH: Well, there is cost
22 information in the application, but I'm not asking
23 for a specific cost. I'm asking if there would be
24 an incremental cost to get that kind of --

25 MS. DILLEN: Asked and answered.

1 MR. REICH: Just two questions. That's
2 all.

3 CHAIRMAN RUSSELL: I tend to agree with
4 Abigail. What increment are we going to be using?
5 If you can define that in the record, then it will
6 be allowable. Other than that, I don't think it
7 really has that much to do with that.

8 MR. REICH: All right. At a break, we
9 can try that.

10 Q. (By Mr. Reich) Mr. McCutchen, just a
11 few more questions. You've heard testimony, Mr.
12 McCutchen, about a couple of facilities that had
13 permitted numbers slightly lower than the .012
14 pounds per million Btu number that's in the
15 Highwood permit; do you recall that?

16 A. Yes, I do.

17 Q. And have you looked at the list that's
18 in the permit application of those facilities?

19 A. Yes.

20 Q. Why don't you look at Tab 4. I think it
21 shows up in two places. But if you'd look at the
22 last page of Tab 4, Appendix B-6.

23 A. (Complies)

24 MR. MARBLE: What page, please?

25 MR. REICH: It's the very last page of

1 that exhibit right before Tab 5. There should be
2 a chart.

3 A. A chart labeled, "PM10 RBLC Summary."

4 Q. (By Mr. Reich) What is an RLBC summary?

5 A. RACT/BACT/LAER Clearhouse, or RBLC.

6 Q. Just to go back for a second, when you
7 do a BACT analysis, do you always choose the
8 lowest limit that out there, as shown on the
9 RACT/BACT/LAER Clearinghouse?

10 A. Do you mean do I choose that as BACT for
11 the specific source?

12 Q. Yes.

13 A. I go through the BACT process, and
14 whatever comes out of that BACT process is -- if
15 the agency agrees with me -- BACT. And that's
16 done by starting with the top most level, and
17 either accepting that, or using the economic
18 energy and environmental impacts, rejecting it.
19 If you're able to reject it, then you probably are
20 not going to end up with the lowest number that is
21 out there for other sources.

22 Q. Why is that?

23 A. Because you're starting usually with the
24 lowest -- with the most stringent, or best
25 controls, or greatest control efficiency number,

1 which is probably what the lowest number out there
2 represents.

3 Q. And is BACT a site specific analysis?

4 A. It's case-by-case, which includes site
5 specific factors, yes.

6 Q. What types of site specific factors
7 would be included in a BACT analysis, say, for
8 Highwood Generation?

9 A. You have to adhere to the three criteria
10 if you're going to follow the top down process,
11 which are the energy, environmental, and economic
12 impacts. But the amount of those impacts varies
13 from site to site, source to source, and the fuel
14 used, the raw materials used, the water
15 availability. A lot of other factors affect those
16 three criteria. And those then are used as a
17 basis for rejecting that top level by the
18 applicant.

19 And then the applicant, as mentioned,
20 submits that analysis to the state agency; and
21 they review this and determine whether they agree
22 or disagree with the BACT level of control
23 selected by the applicant.

24 Q. Is a BACT analysis the same as a LAER
25 analysis?

1 A. No.

2 Q. Does a LAER analysis consider cost
3 effectiveness?

4 A. No, it does not, except to the point --
5 Again, this is just EPA policy. But EPA policy
6 has long standing been that if a level of control
7 is so costly that no new source could be built by
8 that industry to be able to meet that limit, then
9 that's considered not to be LAER. In other words,
10 if it just simply precludes industry from building
11 again, period, that's as far as the cost analysis
12 goes.

13 Q. But otherwise under LAER as compared to
14 BACT, do you choose the lowest permitted number
15 that's out there as your number?

16 A. You choose the lowest number achieved in
17 practice, or the lowest number in any SIP, State
18 Implementation Plan.

19 Q. And we said that's not the same as what
20 you do in a BACT analysis?

21 A. No, it is not.

22 Q. Taking a look at this last page on
23 Exhibit 4, there is two facilities listed that are
24 below .012; am I correct?

25 A. Yes, Reliance and JEA Northside, at the

1 top.

2 Q. Where are those facilities located?

3 A. If you look at the left hand column, you
4 have the abbreviation for the state. Reliant,
5 that facility is in Pennsylvania; the JEA
6 Northside is in Florida.

7 Q. And do you know whether they use eastern
8 coal or western coal?

9 A. I don't know for certain, but since they
10 are in the east area, I would assume that they are
11 using eastern coal.

12 Q. What is the difference between eastern
13 coal and western coal, such as the PRB coal in
14 this case?

15 A. A lot of the eastern coal is bituminous,
16 and I believe the PRB coal is subbituminous, which
17 means by subbituminous, it has fewer Btu's per
18 pound of coal. Good stuff, though.

19 Q. How does that relate to heat value?

20 A. I believe that the Powder River Basin
21 coal, a lot of it is around a 9,000 Btu per pound
22 range. Most of the bituminous coals are anywhere
23 from 10,000 to 15,000 Btu's per pound.

24 Q. What is the impact and the difference in
25 heat levels that you just described between

1 eastern coal and western coal? That is, what's
2 the impact of higher heat values on emission
3 rates?

4 A. If you're expressing emission rates in
5 pounds per million Btu, and burning a pound of
6 coal creates the same amount of particulate,
7 whether it's bituminous or subbituminous, that may
8 be a big if, depending on the kind of coal you're
9 dealing with. But if you assume that for
10 simplicity sake, then the fact that you get 9,000
11 Btu's out of a pound of the subbituminous versus,
12 say, 15,000 Btu's out of a pound of bituminous,
13 means if the pounds of pollutant are the same,
14 that you have a lower pounds per million Btu
15 emission rate from bituminous coal.

16 In other words, the higher the heat
17 value of the fuel, the lower the pounds per
18 million Btu rate would be, all things else being
19 equal, just because of the pounds per million Btu
20 limit or expression of emission rate.

21 Q. In your opinion, if the top two
22 facilities listed on that chart showing slightly
23 lower emission rates than the emission rate in the
24 Highwood permit used eastern coal, could that be
25 an explanation of why the emission rates are

1 lower?

2 A. It could be an explanation. There could
3 be a number of different explanations for the
4 lower limits. We don't know for sure. I think
5 I've had some information on a different table
6 which I don't have up here with me, but that some
7 of these limits are filterable only, some are a
8 combination of the two.

9 Again, going back to the Deserit permit,
10 EPA expressed concern about Pennsylvania's
11 calculation of the pounds per million Btu rate for
12 the River Hill facility, which was listed as being
13 .010 filterable pounds per million Btu, and they
14 did the calculation, and decided that Pennsylvania
15 had erred in their calculation, and that the rate
16 was actually based on the control efficiency being
17 specified, .012, which is the same as the Highwood
18 facility.

19 Q. So if you take the Deserit permit
20 analysis, then that would leave only one permit on
21 that list that's got a lower rate than the SME
22 permit?

23 A. That was for River Hill. I'm not sure.
24 This is a Reliant Energy Seward, but it does make
25 you wonder if Pennsylvania is doing a consistent

1 error in calculating pounds per million Btu rates.

2 Q. Are you aware whether Southern Montana
3 did any modeling to compare the projected PM10
4 emissions under the surrogate analysis to the
5 PM2.5 National Ambient Air Quality Standards?

6 A. Yes, it's my understanding that they did
7 do so. They used the total PM10 emissions, and
8 modeled those, and compared those to the PM2.5
9 National Ambient Air Quality Standards.

10 Q. Is that what the surrogate analysis, or
11 surrogate guidance from EPA requires?

12 A. My understanding is that the surrogate
13 guidance for the NAAQS analysis only requires you
14 to use PM10 emissions and compare those to the
15 PM10 NAAQS.

16 MS. DILLEN: Objection. I'm not sure
17 why this is the relevant. The modeling is not at
18 issue in this case.

19 MR. REICH: It's not a question of
20 modeling, it's a question of whether they use the
21 surrogate analysis straight up, or whether they
22 went beyond it.

23 MS. DILLEN: I don't understand how
24 non-BACT related activities during the permitting
25 process are relevant.

1 MR. REICH: The question has been asked
2 and answered, so --

3 CHAIRMAN RUSSELL: Let's move on then.

4 MS. DILLEN: I thought you were moving
5 on to the next question.

6 MR. REICH: I am moving on to the next
7 question.

8 MR. ROSSBACH: "I'm objecting to
9 myself;" is that what you're doing?

10 MR. REICH: No.

11 Q. (By Mr. Reich) Mr. McCutchen, do you
12 have an opinion whether there are currently
13 available tools, as that term is used in the SEitz
14 guidance and the page guidance, to conduct a PM2.5
15 specific BACT analysis in a power plant like
16 Highwood Generation station?

17 A. I do have an opinion on that, and that
18 is that those tools are not available yet,
19 according to the EPA, and I agree with EPA's
20 statement.

21 Q. So you disagree with Mr. Taylor in that
22 respect?

23 A. I guess that I do.

24 Q. Do you have an opinion whether the BACT
25 analysis performed by SME and approved by the

1 State in this case was proper and appropriate
2 under the BACT analysis guidance as you understand
3 it?

4 A. Yes.

5 MR. REICH: No further questions on
6 direct.

7 MS. DILLEN: Can we take a short break?

8 CHAIRMAN RUSSELL: You bet. Why don't
9 we take ten minutes.

10 MS. DILLEN: That's fine.

11 (Recess taken)

12 CHAIRMAN RUSSELL: Let's go ahead and
13 get started again.

14 MS. DILLEN: I'm just looking for our
15 next open exhibit. It's "I," I believe.

16 (MEIC Exhibit I
17 was marked for identification)

18

19 CROSS-EXAMINATION

20 BY MS. DILLEN:

21 Q. Mr. McCutchen, you have before you what
22 I've just had labeled as Exhibit I. Can you
23 identify what this is.

24 A. Yes. This is the report from the
25 National Energy Technology Laboratory on the

1 demonstration project at Ottertail, I believe.

2 Q. So this is a report that was prepared by
3 the government agency, the Department of Energy?

4 A. Yes.

5 Q. And is it a report that you've had an
6 opportunity to review before?

7 A. Yes.

8 Q. Is it the report that you were referring
9 to in your earlier testimony when you were
10 discussing whether membrane bags are an available
11 technology or not?

12 A. Yes.

13 Q. Mr. McCutchen, you testified that the
14 reason -- Let me take a step back. Are you aware
15 that this was a pilot project testing out a new
16 kind of control technology called an advanced
17 hybrid -- something so new that even I don't know
18 its name, since we just found about this.

19 MR. REICH: Particulate collector
20 technology.

21 Q. (By Ms. Dillen) -- advanced hybrid
22 particulate collector; is that correct?

23 A. Yes.

24 Q. And so this isn't a conventional
25 baghouse like the one that would be installed at

1 the SME facility; is that correct?

2 A. It's not conventional in the sense that
3 it's a retrofit of an electrostatic precipitator.
4 They put bags into the shell of the electrostatic
5 precipitators.

6 Q. Isn't this a case that the DOE was
7 testing out a new combination where an ESP would
8 first collect some of the particulate matter, and
9 then put it into a baghouse that would have fewer
10 bags than usual?

11 A. The sense I got in reading it was that
12 the hope was that for sources that had
13 electrostatic precipitators that would need to be
14 overhauled on a major basis, because they weren't
15 collecting very efficiently any longer, might
16 instead be able to use these membrane bags by
17 installing them into the shell of the
18 electrostatic precipitator, in other words,
19 pulling out of innards of the precipitator except
20 for the first field, which they left intact in
21 this particular case, and used a membrane
22 technology, which would be a lot cheaper than
23 refitting the entire -- rebuilding the entire
24 precipitator up to current standards.

25 Q. Correct. You would agree, though, that

1 this is not the configuration that's being
2 considered at the SME Highwood facility?

3 A. No, because they haven't been built yet.
4 So you wouldn't build a precipitator, and then rip
5 the guts out, and put the bags in. But it's
6 membrane bags.

7 Q. Correct. I'm asking the question which
8 is: Are these membrane bags being put into a
9 conventional baghouse? Yes or no.

10 A. No.

11 Q. Are you aware whether membrane bags are
12 currently in use on a commercial scale for other
13 applications other than power plants?

14 A. You mean on other types of sources?

15 Q. Yes.

16 A. I don't know if they're being used full
17 scale, but I know they are being tried out on
18 other sources.

19 Q. Are you aware that membrane bags have
20 been around for at least ten years?

21 A. I don't know the exact time, but I know
22 that W. L. Gore Company had news that the Air
23 Pollution Association meetings, and some of their
24 exhibits have been the membrane bags. I don't
25 know how much years they've been doing that.

1 Q. You were here for Mr. Hal Taylor's
2 testimony; that's right, isn't it?

3 A. Yes.

4 Q. Did you hear him testify about the Fort
5 James facility, which was a fluidized bed boiler
6 for burning petroleum coke, and it had a dry FGD?

7 A. Yes.

8 Q. And were you aware that he mentioned he
9 had overseen the installation of membrane bags at
10 that facility?

11 A. I did not recall that, but I will take
12 that as a given.

13 Q. And is there anything -- There is no
14 reason why membrane bags working at a CFB boiler
15 burning petroleum coke wouldn't work at a CFB
16 boiler burning CFB coal, is there?

17 MR. REICH: Objection. I don't think
18 you've laid the foundation for what type of
19 technology was in use Fort James.

20 MS. DILLEN: I believe I did, fluidized
21 bed boiler, it's burning petroleum coke, and it's
22 using also a dry FGD.

23 THE WITNESS: Could you repeat the
24 question?

25 Q. (By Ms. Dillen) did any of your recent

1 research on membrane bags lead you to believe that
2 there would be any difference between installing
3 membrane bags at a CFB boiler at the HGS power
4 plant versus installing membrane bags at a CFB
5 boiler mentioned by Mr. Taylor?

6 A. I don't know all of the details about
7 the facility. I believe that's one that has
8 boilers ranging from around 10 to 45 megawatts,
9 which are much smaller in scale, and it is a
10 different fuel. So I don't know what that means
11 in terms of switching over to a coal fired basis
12 on a much larger scale.

13 Q. Is it fair to say, though, that your
14 testimony today, your conclusion that membrane
15 filters were not an available technology, was
16 based solely on this DOE report?

17 A. I've looked at a couple of other
18 reports, but --

19 Q. In your testimony today, you mentioned
20 solely --

21 A. Testimony today?

22 Q. -- the Ottertail report, did you not?

23 A. The Ottertail report is the only one
24 that I mentioned today.

25 Q. Do you know what an air-to-cloth ratio

1 means?

2 A. Yes.

3 Q. Could you explain that.

4 A. Sure. That represents the cubic feet of
5 air per square foot of cloth, and it basically is
6 a measure of the number of bags that you'd need
7 once you convert the bags over into the square
8 footage of cloth area that they represent for each
9 bag. Then you just take the number of bags you
10 have times that area, and you can get the -- Of
11 course, the cubic feet of air, the volume of the
12 air flow you'd expect through there, and that
13 ratio is pretty critical for most of the bag
14 filtration.

15 Q. And you said that that air-to-cloth
16 ratio is pretty critical to making sure the air
17 filtration works; is that correct?

18 A. Yes.

19 Q. Do you know what a normal air-to-cloth
20 ratio for a boiler baghouse would be?

21 A. I don't recall offhand.

22 Q. Do you know what the normal air-to-cloth
23 ratio for a membrane bag would be?

24 A. Not offhand, no.

25 Q. Would it surprise you to learn that this

1 project, which was designed to try to reduce
2 air-to-cloth ratios and costs accordingly, had
3 tried to stretch these bags beyond their rated
4 air-to-cloth ratios?

5 A. Are you referring to the Ottertail
6 project?

7 Q. Yes, I am.

8 A. I do not recall that from the report.

9 Q. I will point you to that reference in a
10 moment, Mr. McCutchen. In the meantime, were you
11 aware that these bags had been subjected to
12 temperatures for which they were not rated in this
13 pilot project?

14 A. Again, you're referring to the Ottertail
15 project?

16 Q. Yes, I am.

17 A. (Examines document)

18 Q. If you'd like, I can refer you to Page
19 25.

20 A. Okay. (Examines document)

21 Q. If you would like to look at third
22 paragraph down, I believe the fourth sentence
23 beginning, "The failures." If you'd just read
24 that sentence.

25 A. Page 25?

1 Q. Yes. There is a bullet point paragraph,
2 then there is a one liner paragraph, followed by a
3 full paragraph.

4 A. Okay.

5 Q. And there is a final sentence. If you
6 would read that, please.

7 A. "The failures were attributed to the
8 fibers being weakened by high temperatures and
9 high energy pulsing."

10 Q. And continue on to the next.

11 A. "Plant data confirms the bags were
12 exposed to temperatures above their rated values."

13 Q. And would you agree that part of the
14 critical part of this configuration that was being
15 tested at this pilot project was the ESP and how
16 the ESP was working?

17 A. You mean in terms of causing the high
18 temperatures?

19 Q. I mean your contention has been that
20 this project didn't really work, that some of the
21 membrane bags that were tested failed; is that
22 right? Is that an accurate characterization of
23 your testimony?

24 A. Actually I stated that it was a high
25 pressure drop on the bags that caused the main

1 problem.

2 Q. Well, I guess I'm trying to get to the
3 bottom of what the problems were, and whether they
4 were caused by the bags, or whether they were
5 caused by this new configuration that the DOE was
6 trying out that's quite different from a
7 conventional bag house.

8 What I'm asking you is: Are you aware
9 that that first ESP level was part of the control
10 system that was being tested?

11 A. The first -- You're talking about the
12 first field in the ESP?

13 Q. Yes.

14 A. That was turned on in an effort to
15 reduce the initial loading to the bags when the
16 high pressure drop began. That was my reading of
17 the report.

18 Q. Maybe it would be useful just to refer
19 to the description of the technology that is being
20 tested.

21 A. Certainly.

22 Q. If you'd turn to Page 12.

23 A. Page 12. Which part of the paragraph?

24 Q. Starting with the sentence beginning --
25 It's the second full paragraph beginning, "The

1 advanced hybrid."

2 A. Okay. Do you want me to read that?

3 Q. Sure.

4 A. "The advanced hibrid uses a combination
5 of electrostatic precipitation and fabric
6 filtration to achieve high collection efficiency.
7 The ESP component of the advance hybrid removes
8 the bulk of the particulate matter before the flue
9 gas reaches the bags. Extremely high efficiency
10 is achieved by usingly membrane filter bags.
11 Removing most of the particulate ESP component
12 allows membrane bags to operate at high AC ratios,
13 thus reducing the number of the relatively
14 expensive membrane bags."

15 Q. So I read that to mean that the ESP is
16 the first stop in controlling the PM emissions,
17 and it's sort of setting the stage for further
18 controls by the membrane filter bags?

19 A. Yes, that's the way I read that
20 paragraph as well.

21 Q. So wouldn't you agree that whether the
22 ESP, that first stage, is working well would be an
23 important factor in whether this pilot project was
24 going to work out?

25 A. It does appear that to have the membrane

1 bags feasible at all, you're going to have to
2 collect -- put another collector in front of them.

3 Q. Correct. And so to have the membrane
4 bags work at all, to be feasible, you'd have to
5 have that ESP working correctly, wouldn't you?

6 A. If you were saying that you have to have
7 both an ESP and a membrane filter along with a
8 membrane filter bag for the system to work right,
9 I'm not sure that that's the case in all
10 situations, but it would certainly add to the
11 expense.

12 Q. I don't think that's what I'm saying.
13 Perhaps I can rephrase my question. You said that
14 the ESP is necessary to make the bags be able to
15 capture the particulate in this particular
16 configuration; is that right?

17 A. No, I didn't say that. My understanding
18 of this experiment was that in an effort to reduce
19 the high pressure drop across the bags, among the
20 things that they tried -- which was a good idea --
21 was to try and collect the bulk of the particulate
22 matter before the flue gas reaches the bag, so
23 that the membrane bags can do what they evidently
24 do best, which is to be able to collect fairly --
25 the fine particles in fairly small -- relatively

1 small concentration, compared to having to treat
2 the full brunt of uncontrolled particulate
3 emissions.

4 That way the filter cake doesn't build
5 up as quickly, and you don't get as high a
6 pressure drop as quickly. So the ESP helps keep
7 the pressure drop down, and helps the membrane
8 filters do a good job of collecting small
9 particles.

10 I don't know for sure whether that's
11 absolutely essential in every situation, but if it
12 is, that adds to the cost of using membrane bags.

13 Q. Mr. McCutchen, are you aware that during
14 this test pilot, every bag that was used and
15 tested failed, including bags that were not
16 membrane bags?

17 A. Do you mean all of the bags that were
18 made for the project? Because they tried a lot of
19 different types of bags.

20 Q. Correct.

21 A. I guess I didn't pick up on whether they
22 actually used just regular fiberglass bags. Did
23 they?

24 Q. I believe they did. Is it fair to say
25 that you're not terribly familiar with this

1 report, Mr. McCutchen?

2 A. I have read it once.

3 Q. On the basis of reading this report
4 once, you testified today that based on a pilot
5 project that was testing membrane bags in an
6 unconventional baghouse, that membrane bags are an
7 unavailable technology? Is that your testimony
8 today?

9 A. My testimony is that the DOE -- which is
10 trying to find ways to economically collect
11 particulate matter, including small particles --
12 did a full scale retrofit demonstration, and they
13 ended up with high pressure drop, and bag
14 failures, and some other problems, which I didn't
15 go into. I just went into high pressure drop.
16 They weren't able to solve the problems, according
17 to the report. And so therefore, the facility
18 basically just went with regular bags, pulser jet
19 bags.

20 Q. That's not quite correct. They went
21 with a -- Isn't it true, Mr. McCutchen, that they
22 went back to a conventional baghouse, not
23 conventional bags? It was the advanced hybrid
24 reactor, was it not, that was rejected in this
25 report?

1 A. They did go to, I believe, a
2 conventional baghouse overall. The advanced
3 hybrid reactor was considered a failure, but that
4 was because of the high pressure build-up on the
5 bags, plus, as you noted, the failure of the bags.
6 I'm not quite sure what that has to do with the
7 fact that the bags were in a shell that was at one
8 time a precipitator, versus bags in a shell that
9 is in a fabric filter baghouse.

10 Q. Mr. McCutchen, is it true that the point
11 of this project was to try to come up with a
12 configuration that would allow bags to be placed
13 with a lower air-to-cloth ratio to save money on
14 membrane bags?

15 A. Well, the paragraph that I just read was
16 that the precipitator would take care of the bulk
17 of the particulates, so that they would have to
18 use fewer of the expensive membrane bags, which
19 would, of course, create a higher air-to-cloth
20 ratio the fewer bags you use.

21 Q. Mr. McCutchen, I would refer you to Page
22 12 of the report.

23 A. (Complies)

24 Q. Again, I think we've covered this
25 ground. I'm just going to read this sentence to

1 you again. "Extremely high efficiency is achieved
2 by using membrane filter bags. Removing most of
3 the particulates with the ESP component allows the
4 membrane bags to operate at high AC ratios, thus
5 reducing the number of the relatively expensive
6 membrane bags."

7 Now, at the top of the page, this is
8 Page 12. Actually I'm going to start with the
9 last sentence on Page 11. Page 11 states,
10 beginning with sentence beginning with the word,
11 "Baghouses operate." Are you with me?

12 A. Yes.

13 Q. "Face velocities in the range 1.5 to
14 five FPM, with 1.5 to 2.5 FPM being the most
15 common for the reverse gas baghouse, and three to
16 five FPM being typical for the pulse jet
17 baghouses;" is that correct?

18 A. Yes.

19 Q. "Studies have shown that the FF
20 collection efficiency is likely to deteriorate
21 significantly when the face velocity is increased.
22 The high collection efficiency of the pores in the
23 filter medium must be effectively bridged. With
24 conventional fabric at low AC ratios, the residual
25 dust serves as part of the collection media, but

1 with high AC ratios, only a very light residual
2 dust cake is acceptable, so the cake cannot be
3 relied on to achieve high collection efficiency."

4 Now, that's a lot of technical jargon.
5 This report is a lot to absorb today when it's
6 been mentioned for the first time, and I'm happy
7 to have Mr. Taylor come up and address this if the
8 Board is still confused.

9 But the way I read this, Mr. McCutchen,
10 is that this pilot test was all about creating a
11 way to use fewer membrane bags than you would use
12 in a conventional baghouse; do you disagree with
13 that assessment?

14 A. Yes, I do disagree.

15 Q. Would you disagree that this pilot test
16 is not evidence of how membranes -- Excuse me.
17 Is it not true that this pilot test -- Let me
18 start over.

19 Is it not the case that this pilot test
20 addresses the effectiveness of membrane bags in
21 the new technology, the advanced hybrid
22 particulate collector? That's a yes or no
23 question.

24 A. Yes, it is. "Advanced hybrid" is an
25 interesting term. I know it's trade marked. But

1 it's basically this idea of reusing a
2 precipitator. And admittedly this is different
3 from a regular baghouse stand alone, but it is one
4 of the few studies we have of performance at
5 relatively high, relatively large scale of
6 membrane filters.

7 Q. Mr. McCutchen, have you ever had any
8 experience looking at how membrane bags are used
9 in the metalurgical industry?

10 A. Metallurgical, no.

11 Q. Have you ever encountered, for instance,
12 the James Creek, the Fort James facility that Mr.
13 Taylor had mentioned in his testimony?

14 A. No. That was on boilers at the
15 facility, right?

16 Q. This that was at a CFB boiler.

17 A. Right. So that's not a metalurgical
18 facility.

19 Q. I'm just asking you. Had you ever heard
20 the Fort James application before you heard Mr.
21 Taylor's testimony?

22 A. No.

23 Q. Had you ever heard about membrane bags
24 before in the way that he was discussing them with
25 respect to other applications?

1 MR. REICH: Objection. I think you have
2 to be a little more precise, Counsel, as to "other
3 applications." That's too vague.

4 Q. (By Ms. Dillen) You heard Mr. Taylor's
5 testimony when he testified that he had overseen
6 the installation of membrane bags at several
7 projects. Have you ever had occasion to work on
8 those sorts of projects, or investigate those
9 projects that Mr. Taylor had mentioned?

10 A. Other than trying to follow through and
11 see what information I could find on the projects
12 that were mentioned in his expert report or in his
13 testimony, no.

14 Q. So is it fair to say that you did some
15 research for purposes of this litigation on
16 membrane bags?

17 A. Some additional research, yes. I was
18 aware to just kind of a general extent about
19 membrane bags and their possibilities.

20 Q. But you testified --

21 A. Just pretty general literature, but --

22 Q. But you testified today that you've
23 never looked at them at a BACT analysis, you've
24 never overseen the installation of membrane bags;
25 is that correct?

1 A. Right. That is correct.

2 Q. Is it fair to say that Mr. Taylor
3 probably has more experience with membrane bags
4 than you do?

5 A. If he has any experience directly
6 dealing with membrane bags, he has more experience
7 than I do.

8 MS. DILLEN: I would like to move that
9 this report be admitted into evidence in its
10 entirety. I think it's not an exhibit that
11 Counsel had discussed prior to the proceedings,
12 but having reviewed it in detail myself, I think
13 it would be excellent for the Board to take a look
14 at it, and get a real sense of that report in its
15 entirety. And I would certaly offer Mr. Taylor on
16 rebuttal to discuss his conclusions regarding the
17 report, if the Board feels that that would be
18 useful.

19 MR. REICH: It's up to you to make
20 motions.

21 CHAIRMAN RUSSELL: Do I have to motion
22 to accept this MEIC-I into evidence or as an
23 exhibit?

24 MR. ROSSBACH: So moved.

25 CHAIRMAN RUSSELL: It's been moved. Is

1 there a second?

2 MR. MARBLE: Second.

3 CHAIRMAN RUSSELL: Don seconded. Do you
4 want to lodge an objection?

5 MR. REICH: No objection, since I
6 personally hand delivered it to Ms. Dillen last
7 night. I can't object it.

8 CHAIRMAN RUSSELL: Seeing that, all
9 those in favor, signify by saying aye.

10 (Response)

11 CHAIRMAN RUSSELL: Opposed.

12 (No response)

13 (MEIC Exhibit I
14 was received into evidence)

15 CHAIRMAN RUSSELL: Are you going to ask
16 any more questions regarding this, or are we done?

17 MS. DILLEN: I may come back to it, but
18 for now.

19 CHAIRMAN RUSSELL: What does derate
20 mean? Page 34, Table 6, the last paragraph.
21 "Table 7 shows the derate history of the project
22 as discussed above. Derates were a major --" I
23 have no clue what "derates" means.

24 MS. DILLEN: I now have a clue, but
25 would much prefer my expert to explain this to

1 you.

2 MR. REICH: Mr. McCutchen can.

3 CHAIRMAN RUSSELL: Can you do that?

4 THE WITNESS: I think so.

5 CHAIRMAN RUSSELL: Please. Are you okay
6 with that?

7 MS. DILLEN: Yes.

8 THE WITNESS: The concept of derate is
9 in the electric utility industry the idea that
10 even though you may have a certain capacity for,
11 say, a particular utility boiler to generate
12 electricity to go on the grid, there are various
13 reasons why the theoretical capacity of that unit
14 may be derated or lowered.

15 CHAIRMAN RUSSELL: Derated as in lower
16 rate?

17 THE WITNESS: It's like lowering your
18 credit rating, in a sense.

19 CHAIRMAN RUSSELL: I get it then. I was
20 thinking that was a whole different word.

21 Q. (By Ms. Dillen) Mr. McCutchen, isn't
22 it true that when I deposed you, you said that you
23 had never done a BACT analysis?

24 A. That is correct. I wrote the procedure
25 for how to do a BACT analysis.

1 Q. Correct. But I think your adverb was,
2 "Ironically I've never performed one myself;" is
3 that right?

4 A. That is correct. I, however, have
5 supervised the performance of a BACT analysis.

6 Q. Is it fair to say that you're not doing
7 a lot of the leg work, you're reviewing analyses?

8 A. That is correct.

9 Q. And you've testified that it would be
10 very difficult to find emission factors for a
11 particular source, for instance the SME boiler.

12 Isn't it true that a boiler manufacturer
13 could do a test, and then use a electric
14 microscopy to identify the components of their
15 particulate matter?

16 A. They could do that to get the size
17 distribution of the particles collected.

18 Q. Correct. So they would have some sense
19 of what size particles were in the PM2.5 size
20 range, versus what size particles were in the PM10
21 size range; is that right?

22 A. Yes. You could actually count the
23 number of particles using a reticular lens --
24 that's the terminology for it -- that shows you
25 how long a micron is or two microns are, and you

1 just go down and count the particles. I actually
2 did that one time. And it doesn't really give you
3 the weight.

4 But the main problem is that even though
5 a lot of research work is done on size
6 distribution versus the amount collected in the
7 percent by weight that you have, without a
8 referenced test method, you don't know what, for
9 example, Conditional Test Method 40 is going to
10 give you as the value for the amount of PM2.5
11 filterable, for example, coming out, and you
12 certainly can't use that for the condensible
13 portion of PM2.5. You cannot use a particle
14 count, because what you end up with is materials
15 in the impingers that condense out.

16 Q. You were here yesterday for Mr. Leirow's
17 testimony, I assume?

18 A. Yes.

19 Q. And you heard him testify that Alstem
20 was able to provide him estimates of their
21 condensible emissions, and he found that those
22 numbers seemed to work out, and he was able to use
23 them to perform a BACT analysis?

24 A. Yes. I assume that it was probably 202,
25 which of course now has been recognized as having

1 its own problems with artifacts.

2 Q. But of course, if a test has some
3 problems, that doesn't preclude its use in a BACT
4 analysis?

5 A. We really had no choice for
6 condensibles, because PM10 condensibles are
7 exactly the same as PM2.5 condensibles. So
8 whether you use PM10 as a surrogate or not, you're
9 still doing a BACT analysis for condensibles.

10 Q. So even if we would all love to have a
11 perfect test, sometimes we have to use an
12 imperfect test, and we do use imperfect tests in
13 BACT analyses quite often, don't we?

14 A. That's correct. But for filterable in
15 terms of the BACT analysis with EPA policy, you
16 have a choice of going with either PM10 or PM2.5
17 filterable, and it's the PM2.5 filterable data
18 that we lack.

19 Q. With respect to that PM2.5 filterable
20 data, you testified today to the existence of a
21 Conditional Test Method 39; is that correct?

22 A. I believe I got the two mixed up. I
23 believe the 39 is the dilution method, which gives
24 you a total; 40 is the filterable.

25 Q. I was going to ask you about that. So

1 now that we have that confusion cleared up, let's
2 just make sure we do. Conditional Test Method 39
3 is a dilution method that would be used for
4 condensibles; is that correct?

5 A. For condensible and filterables
6 together.

7 Q. Then the Conditional Test Method 40
8 would be a test method for filterables that would
9 eliminate some of the problems that you've talked
10 about with respect to Method 202?

11 A. No. Hopefully it will end up being the
12 referenced method for PM2.5 filterable, with the
13 cyclone in front of the filter, just like there is
14 now a cyclone in the front of the filter for PM10,
15 just a different cyclone.

16 Q. Just so we're all on the same page.
17 There is a conditional test method out there that
18 EPA has looked at for filterable PM2.5, and that's
19 Conditional Test Method 40?

20 A. Yes.

21 Q. And then there is a test that EPA has
22 looked at for filterable and condensible together,
23 a dilution test, and that's Conditional Test
24 Method 39?

25 A. Yes.

1 Q. States have the authority to use those
2 Conditional Test Methods right now, do they not?

3 A. States can use those methods, but for
4 them to use them for the EPA mandated programs,
5 they need to get EPA approval, or they have to go
6 through a rulemaking process to get an approved
7 SIP, the State Implementation Plan.

8 Q. Isn't it true that a state can use a
9 Conditional Test Method just so long as EPA has
10 the power to veto that decision?

11 A. Yes.

12 Q. So it's not the case that you'd have to
13 go through rulemaking in order to approve the use
14 of a Conditional Test Method in a BACT permitting
15 process; is that right?

16 A. That's correct. I was giving you an
17 answer for all of the air management aspects of a
18 Conditional Test Method.

19 Q. But when it comes to doing a BACT
20 analysis, if for instance the DEQ wanted to say to
21 SME, "For purposes of their operating permit,
22 we'll use Conditional Test Method 39," they could
23 do that; is that right?

24 A. Yes. I'm sure in fact EPA would love to
25 have the states developing the information that

1 they need to proceed forward with a test method.

2 Q. And you agree that Control Test Method

3 39, which covers both filterables and

4 condensibles, is a reliable test method?

5 A. Do I think it's a reliable test method?

6 Q. Yes.

7 A. I don't know. It's out there for

8 evaluation.

9 Q. Do you recall our deposition here in

10 Montana of you in October of last year?

11 A. Yes.

12 Q. Do you remember what your testimony was

13 at that time with respect to the dilution method?

14 A. Yes. I believe that I indicated that I

15 thought the dilution method was a method that had

16 a great deal of promise to it, and that I hope it

17 ended up being a method that worked out.

18 Q. Perhaps I can direct you. Do you have

19 your deposition in front of you?

20 A. No, I don't.

21 MR. REICH: (Provides document)

22 Q. (By Ms. Dillen) Page 142, I'm starting

23 from Line 1, question: "I want to clarify a few

24 points in your previous answer. One is --" This

25 is -- I'm reading.

1 A. Page --

2 Q. Page 142, starting at the top of the
3 page.

4 A. Okay. I see it.

5 Q. Question by me: "I want to clarify a
6 few points in your previous answer. One is I took
7 you to say that the conditional test method that's
8 currently under consideration for PM2.5 is a great
9 method, in your opinion?" Answer: "I'm assuming
10 that this is referring to the dilution method, and
11 if so, the dilution method, that I do think is a
12 much better method than the condensible method."

13 Question: "So you believe there is a
14 dilution method out there that is a reliable way
15 of testing for PM2.5 emissions?" Answer: "From
16 what I've heard about that, it is, yes."

17 Mr. McCutchen, you've talked a lot about
18 the difficulties why it would be impossible to
19 undertake a PM2.5 BACT analysis, and what I've
20 understood from you to be the reasons are that you
21 feel they're not reliable emission factors and
22 inventories, and that there is not reliable test
23 method; is that right?

24 A. Yes.

25 Q. So doesn't that boil down to the problem

1 that you think PM2.5 can't be measured
2 appropriately, and therefore, it's impossible to
3 do a BACT analysis?

4 A. I think it could be measured, but the
5 problem is the measurement, the number you come up
6 with is tied to the test method; and without a
7 referenced test method and information resulting
8 from using that test method, we just don't have
9 the data available to evaluate BACT for a source
10 that hasn't been built yet.

11 You need not only a valid method -- and
12 I'm referring to these as referenced test methods
13 -- but because the particular boiler we're
14 referring to here hasn't been built yet, you have
15 to get data using that test method on a similar
16 type boiler to get an idea of what the emissions
17 would be of PM2.5.

18 Q. So my question stands. Your concern is
19 the lack of a referenced test method that gives
20 reliable emission rates, i.e., measurements of
21 PM2.5?

22 A. Yes.

23 Q. And you edited the draft New Source
24 Review Manual that is Exhibit 1 in this
25 proceeding; is that right?

1 A. I did edit the manual. Let me see if it
2 is Exhibit 1. (Examines document) Yes.

3 Q. Turning to Page 2, the second paragraph
4 reads, "In addition, if the reviewing authority
5 determines that there is no economically
6 reasonable or technologically feasible way to
7 accurately measure the emissions, and hence to
8 impose an enforceable emission standard, it may
9 require the source to use design, alternative
10 equipment, work practices, or operational
11 standards to reduce emissions of the pollutant to
12 the maximum extent;" is that what it that says?

13 A. Yes.

14 Q. Is it fair to say that in your opinion,
15 BACT does not require necessarily an emissions
16 limit in terms of measurable emissions using a
17 testing method?

18 A. This was intended for situations like
19 fugitive emissions and other situations where you
20 could actually do designs and alternative
21 equipment. It might be possible in this case to
22 work out enough specifics in work practices and
23 the exact designs and everything else of a piece
24 of control equipment to avoid having to use an
25 emission limitation; but to know which piece of

1 equipment actually represented BACT, you'd still
2 need to know some emissions, and you'd need to
3 know the uncontrolled and the controlled level of
4 emissions, so that you could figure out the
5 control efficiency of the unit, and --

6 Q. Is it true in this case --

7 MR. REICH: Objection. Let him finish
8 his answer.

9 A. One way of looking at that paragraph is
10 that EPA might have had -- probably did have two
11 different choices of which way to go. One is that
12 without a way of technically feasibly determining
13 PM2.5 filterable emissions, and for that matter
14 condensible emissions, because of problems with
15 Method 202, they could have gone either with a
16 surrogate -- which they evidently did with PM10 --
17 or they could have tried this other approach of a
18 design, alternative equipment, work practice, or
19 operational standard.

20 I think that would have been a
21 nightmare, because they would have not only had to
22 look at specifically the Highwood facility, but
23 all other source types that are covered in New
24 Source Review, which is hundreds of different
25 types of sources, burning dozens of different

1 fuels, and using hundreds of different raw
2 materials; and to try and come up with design,
3 alternative equipment, work practice, or
4 operational standards for all of those, and be
5 able to compare their effectiveness, I think would
6 be a monumental task.

7 Q. (By Ms. Dillen) Mr. McCutchen, is it
8 true that BACT requirements apply to regulated
9 criteria pollutants?

10 A. They actually apply to anything that is
11 considered a regulated NSR pollutant, including
12 criteria pollutants.

13 Q. Isn't it true that BACT requirements
14 apply to NAAQS requirements? Yes or no. Isn't it
15 true that NAAQS pollutants such a PM2.5 are
16 subject to BACT requirements?

17 A. Yes.

18 Q. Yes or no question. Is it true that
19 BACT requirements demand -- Is it true that --
20 withdraw that question.

21 I'd like to direct you to Page B-1,
22 which quotes the Clean Air Act itself, of Exhibit
23 1, the New Source Manual. I know we're familiar
24 with this language, but I feel that it's
25 appropriate to highlight this, because we haven't

1 focused on it before.

2 "If the Administrator determines that a
3 technical or economic limitation on the
4 application of measurement methodology to
5 particular emissions unit would make the
6 imposition of an emissions standard infeasible, a
7 design, equipment, work practice, operational
8 standard, or combination thereof may be prescribed
9 instead to satisfy the requirement for the
10 application of Best Available Control Technology.
11 Such standard shall, to the degree possible, set
12 forth the emissions reduction achievable by
13 implementation of such design, equipment, work
14 practice, or operation, and shall provide the
15 compliance by means which achieve equivalent
16 results."

17 Is that a correct read of the Clean Air
18 Act, plain language?

19 A. Yes. We actually suggested Congress put
20 that in.

21 Q. I'm glad you did. Is it fair to say
22 that in the BACT process, even if you don't have
23 the perfect information, you do the best you can?

24 A. Yes. To do the best you can in this
25 case would be using PM10 as a surrogate.

1 Q. Mr. McCutchen, you testified with
2 respect to two of the facilities that Mr. Reich
3 had pointed you to, a Texas coal plant and a
4 Florida coal plant, earlier; do you recall that
5 testimony?

6 MR. REICH: Objection. It's a
7 Pennsylvania plant and a Florida plant.

8 Q. (By Ms. Dillen) Excuse me. A
9 Pennsylvania plant and a Florida plant.

10 A. Yes.

11 Q. And you testified that your impression
12 was that they were burning eastern bituminous
13 coal; is that right?

14 A. Since they were in the east, I said that
15 would be my presumption.

16 Q. Do you know whether those plants --

17 A. Do I know whether they actually are or
18 not?

19 Q. Yes.

20 A. No. I just said it was my presumption.

21 Q. Are you aware that PRB coal is shipped
22 back east, and there are eastern plants that burn
23 PRB coal?

24 A. Yes.

25 Q. Are you aware that in Pennsylvania, for

1 instance, plants also burn waste coal?

2 A. Yes.

3 Q. So it's fair to say that it's not
4 necessarily the case that those plants are burning
5 bituminous coal?

6 A. No.

7 Q. You testified that companies are loathe
8 to invest in expensive test methods; is that
9 right?

10 A. Expensive testing.

11 Q. Expensive testing. Correct. Would you
12 expect that to change if plants were actually
13 subject to PM2.5 requirements?

14 A. They would still probably be loathe to.

15 Q. That's true.

16 A. But if they were subject to requirements
17 to do a certain test using a certain test method,
18 they would undoubtedly do so.

19 Q. You stated today that if you were to do
20 a BACT analysis -- although you've never
21 undertaken one yourself. I know that you've
22 supervised them, but you've never performed one
23 yourself.

24 A. You could stipulate to that. If I were
25 to supervise a BACT analysis.

1 Q. You've stated you would never consider a
2 configuration where you had a fabric filter
3 baghouse plus a wet ESP; is that right?

4 A. We have not done so, and it would not
5 have occurred to me to do so.

6 Q. But you're aware that EPA did consider
7 that precise option in the Deserit permit?

8 A. Yes, I am now.

9 Q. And you stated today that you could
10 conveniently knock out that configuration, that
11 fabric filter plus the wet ESP, as an option based
12 on cost? Just today. Just today, right?

13 A. I'm not sure if "conveniently" is the
14 right word, but my presumption would be based on
15 past BACT analyses, that a control device for a
16 pollutant right after another control device for
17 that same pollutant is generally not cost
18 effective.

19 Q. Let's examine that answer. If you were
20 to be controlling PM2.5, it would not necessarily
21 be the same pollutant; isn't that correct?

22 A. (No response).

23 Q. In the current permit, we have a fabric
24 filter baghouse that's controlling PM10, and the
25 Petitioners are asserting in this case that the

1 addition of a wet ESP would help you catch
2 additional PM2.5.

3 A. Well, by "same pollutant," I meant that
4 in the sense that PM10 includes all of the PM2.5
5 except the precursors. It includes the filterable
6 and condensable. So in effect it's a control
7 device for the same pollutant: Particulate
8 matter.

9 Q. Nevertheless, this is an option that EPA
10 has considered in its own permitting analysis and
11 in some detail; is that correct?

12 A. In the Deserit permit?

13 Q. Yes.

14 A. They used PM10 as a surrogate. Oh, you
15 mean the wet ESP following?

16 Q. Yes.

17 A. That was Option E. They did include
18 that as one of the configurations.

19 Q. So while it's not something that you
20 might consider, EPA did?

21 A. That's correct. And the EPA analyses
22 are at times an indicator of new or shifting EPA
23 policy. So that essentially says that at some
24 point, we may be -- through regional office
25 reviews of PSD permits in the near future --

1 having to look at that as one of the combination
2 options.

3 Q. I believe that you gave Mr. Reich your
4 opinion in this matter that you would not, as you
5 stand here today, choose a wet ESP as a control
6 technology as BACT in this case; is that right?

7 A. Do you mean stand alone?

8 Q. No, I mean in that --

9 A. Following the fabric filter?

10 Q. Yes.

11 A. It's not so much a matter of my choosing
12 it or not. It's that I believe it would not be
13 considered cost effective, and would be dropped
14 out if you did include that in the mix of options.

15 Q. So it's your position that you can
16 answer without going through the step by step
17 analysis?

18 A. That's more of a presumption based on
19 past experience in reviewing what happens with
20 these, including the Deserit permit; and the fact
21 that again, if you follow a Control Device A with
22 Control Device B, it has a lot less pollutant that
23 could possibly even theoretically collect, and if
24 it's as costly as Control Device A, then you're
25 going to have a much higher cost effectiveness

1 number, which as the Deserit analysis showed, is
2 far higher than the usual threshold.

3 Q. You would agree that at Step 1, when you
4 identify control technologies, cost does not come
5 into that consideration, correct?

6 A. That's correct.

7 Q. And then at Step 2, when you're looking
8 at their control efficiencies, you would not
9 consider cost in that analysis, correct?

10 A. In Step 2? That's correct.

11 Q. So when you were first considering the
12 various controls at Steps 1 and 2, cost would not
13 come into it at that point?

14 A. That's correct.

15 Q. And then when you went on to Step 3, you
16 would be considering cost effectiveness on a
17 case-by-case basis; isn't that right?

18 A. In Step 4.

19 Q. Okay. I'm sorry. We're ranking first
20 and then --

21 A. But I knew what you meant. Step 4 is
22 where you consider the cost.

23 Q. So in Step 3, you're still not
24 considering cost; is that right?

25 A. That's correct.

1 Q. So it's not until you get to the very
2 end, when you've assessed how good all the
3 technologies are in terms of emissions reductions,
4 that you start thinking about the money?

5 A. That's correct.

6 Q. And until you do that analysis, can you
7 come up with a conclusion at Step 1, or Step 2, or
8 Step 3?

9 A. A conclusion --

10 Q. -- as to whether a technology could or
11 could not be designated as BACT?

12 A. Not in those first three steps, no.

13 Q. Do you recall at your deposition when I
14 was asking you about whether some technologies
15 could be chosen as BACT or not?

16 A. You will have to refresh my memory.

17 Q. Sure. I'm turning to Page 152, and
18 there I was asking you if it was likely that you
19 would choose a wet ESP as a control technology of
20 choice in a PM10 BACT analysis. Do you recall
21 what your answer was then?

22 A. I will as soon as I read it. I said, "I
23 would not know that without actually going through
24 the analysis."

25 Q. And I asked you then: "Are there other

1 control technologies for PM10 that are more cost
2 effective, but equally effective at pollution
3 control than wet ESP is with regards to PM10?"
4 You said, "Well, again, BACT is case-by-case. I'm
5 not trying to avoid an answer, but there are so
6 many variables in the question you just asked. I
7 don't really know."

8 A. That's correct. And I believe that I
9 was under the impression you were talking a wet
10 ESP versus a fabric filter.

11 Q. So there would be no variables in this
12 instance that would preclude you from giving an
13 answer to the Board today without having done the
14 step by step analysis that you authored?

15 A. I didn't say that. I would probably
16 have to go back and look at this in context. But
17 if on Page 152 we were talking about whether I
18 would choose a wet ESP over, say, a fabric filter
19 in BACT, that's up in the air. You would have to
20 go through the analysis to know that.

21 But we have been discussing whether to
22 add a wet ESP on after already putting a control
23 device on for particulate matter, such as putting
24 a fabric filter on and following that by wet ESP.
25 That's where my presumption about control devices

1 in series comes in.

2 Q. Mr. McCutchen, is a BACT analysis
3 case-by-case or not?

4 A. Oh, absolutely case-by-case.

5 Q. If you were looking at -- If you were
6 conducting a BACT analysis for PM2.5 rather than
7 PM10, do you think the cost effectiveness analysis
8 might change, given the health threat that PM2.5
9 poses?

10 A. I think the cost effectiveness analysis
11 might change, but not because of health.

12 Q. Isn't it true --

13 MR. REICH: Objection. Let him finish
14 his --

15 A. I was trying to create a short answer
16 here. Health is not taken into account in
17 determining -- Possible health effects are not
18 taken into account in determining BACT. It's the
19 best technology you could put on. Then once you
20 get there, and establish the emission limit, you
21 use that emission limit to determine whether there
22 would be health impacts, and if there would be,
23 the agency simply does not issue the permit unless
24 the source is willing to go lower, or there is
25 other factors that change.

1 So health is not ignored, and certainly
2 adverse effects on health are not ignored in the
3 PSD process. They just are not -- That protection
4 doesn't take place in the BACT analysis, it takes
5 place in the impact analysis.

6 Q. Mr. McCutchen, is it your contention
7 that an agency might not set a higher cost per ton
8 threshold for a pollutant that is more dangerous
9 in smaller concentrations than it would for a
10 pollutant that's less dangerous?

11 A. Oh, an agency certainly has the option
12 selecting or having a cost effectiveness threshold
13 for each pollutant.

14 Q. And say with respect to -- We've talked
15 about precursors to PM10, condensed PM10. One of
16 those is NOx, correct?

17 A. Yes.

18 Q. And NOx is already regulated as a
19 criteria pollutant, correct?

20 A. Yes, the NO2 portion.

21 Q. If you were looking at Nox just for NOx,
22 you might come up with one limit, right?

23 A. That's correct.

24 Q. And then if you were considering NOx as
25 a precursor for PM2.5, would that ever affect the

1 amount of money that you were willing to spend to
2 control NOx?

3 A. It could.

4 Q. And how would that change manifest
5 itself?

6 A. The agency would have either a formal or
7 informal idea of what they consider the cost
8 effectiveness threshold, which is basically the
9 dollar per ton number below which they consider
10 that technology cost effective, and above which
11 they consider it not to be cost effective.

12 Q. So is it fair to say if you were
13 considering PM2.5 specifically, the variables that
14 you were considering in your cost effectiveness
15 analysis might change?

16 A. Do you mean the threshold for cost
17 effectiveness? That would be for the agency to
18 decide. They could certainly do so if they wished
19 to do so.

20 They would also need to take into
21 account the fact that if you switched over to
22 PM2.5 only rather than PM10 -- in other words, the
23 amount of PM10 collected by the control device,
24 since that includes all of the PM2.5 collected, is
25 going to be higher in terms of tons per year than

1 the amount of PM2.5 alone collected.

2 So if control device costs the same,
3 dollars are the same, the tons collected -- if
4 you're dealing with only PM 2.5 -- is smaller, so
5 the dollar per ton cost for that same piece of
6 control equipment goes up. So if we switch over
7 to a PM2.5 in the future, one thing that's going
8 to happen is that the cost effectiveness numbers
9 are going to increase over the cost effectiveness
10 numbers for PM10. It's just one of many things
11 that the agency is going to need to consider.

12 Q. Let me just make sure I heard you
13 correctly. The cost effective numbers for PM2.5
14 are going to increase as compared to the cost
15 effectiveness numbers for PM10?

16 A. Right.

17 Q. Mr. McCutchen, I'd just like to cover
18 one last piece that may be of interest to us all
19 hopefully. At Exhibit No. 6, there has been some
20 discussion about where we are in the process of
21 validating conditional test methods.

22 A. Okay.

23 Q. If I could refer you to Page 2653.

24 A. Okay.

25 Q. In the second column that's entitled

1 Conditional Test Methods 39 and 40 -- are you with
2 me?

3 A. Yes.

4 Q. Their comments are they're worried about
5 whether these are good tests. Could you just read
6 EPA's response beginning with, "We agree."

7 A. The entire response?

8 Q. No. I'll stop you.

9 A. "We agree with the comments that neither
10 method has been subjected to adequate public
11 notice and comment rulemaking. Taking that step
12 will facilitate application of the appropriate
13 methods for implementing the SIPs. On the other
14 hand, there are a number of levels of validation
15 already achieved for one or more of these methods
16 that will determine what, if any, additional
17 validation work will be necessary."

18 Q. Thank you. And then it goes on to
19 discuss methods, Control Methods 39, 40, and I
20 believe the 40 Test Method's application in
21 conjunction with Method 202; is that correct?

22 A. Yes.

23 Q. So is it fair to say that while EPA
24 hasn't formally promulgated conditional test
25 methods, that it does have a fair degree of

1 validation of those test methods?

2 A. As of 2007. I think the application was
3 being prepared about two years earlier for the
4 Highwood Station. The Additional Test Methods, as
5 EPA said, still need to go through adequate notice
6 and comment rulemaking, and then we need to get
7 some data using them.

8 Q. But you have testified that these test
9 methods could be used now?

10 A. There is a lot of difference between
11 "could" and "should."

12 Q. It would not be illegal to use them now;
13 is that correct?

14 A. No, it would not be illegal.

15 Q. And in your experience with BACT
16 analyses, supervising them and to some degree
17 doing them yourself, have you ever considered test
18 methods at Step 1 of the BACT analysis?

19 A. Considered --

20 Q. Have you ever considered the
21 availability of test methods at Step 1 of a BACT
22 analysis?

23 A. No.

24 Q. At Step 2?

25 MR. REICH: Objection. You're not

1 letting the witness finish his answer.

2 MS. DILLEN: I'll let him explain his
3 answer later, but I would just like to know at any
4 step of the BACT analysis.

5 MR. REICH: I object. Let him finish
6 the answer to Step 1. He was halfway through.

7 MS. DILLEN: Frankly, he has been
8 stopping and waiting for me to ask another
9 question, and you have been objecting. So I think
10 Mr. McCutchen has had ample opportunity to explain
11 his views here.

12 Q. (By Ms. Dillen) Mr. McCutchen, I'll be
13 happy to let you explain your answer, but I just
14 want to be clear about this.

15 In your experience at BACT Step 1 -- yes
16 or no -- do you consider the availability of test
17 methods?

18 A. Generally no.

19 Q. With respect to Step 2?

20 A. Step 2, the availability of test methods
21 may play a part in knowing whether it's
22 technically feasible; but usually where the test
23 methods tend to come in -- if I could jump ahead
24 -- is Step 3.

25 Q. At what point do you consider test

1 methods and their availability at Step 3?

2 A. In Step 3, you need a reliable test
3 method to be able to develop the data to be able
4 to do Step 3.

5 Q. So this goes to your earlier testimony
6 that you think it's hard to do Step 3 if you don't
7 have a test method; but it's not part of a BACT
8 analysis, is it?

9 A. Step 3?

10 Q. No, considering test methods in Step 3.

11 A. But you can't do Step 3 without a test
12 method --

13 Q. Let me make myself more clear.

14 A. -- and the data.

15 Q. Would you be considering a compliance
16 test method, what test method would be specified
17 as a compliance test at Step 3?

18 A. You need the test method to know how to
19 rank the control equipment. You don't just look
20 at it and say, "Well, that equipment is 99 percent
21 efficient and the other equipment is 99.9
22 percent." Those numbers, those percentages,
23 control efficiency numbers, are derived from data,
24 and the data are derived using test methods.

25 Q. Yet in this permit, there are control

1 efficiencies stated for condensibles; is that
2 correct?

3 A. Yes.

4 Q. And you have stated here that you do not
5 believe that there are referenced test methods for
6 condensibles; is that correct?

7 A. No, not quite. I said there is a
8 referenced test method, Referenced 202 for
9 condensibles. But EPA is in an extremely unusual
10 position -- I can't recall of a single other
11 instance like this offhand -- where they're having
12 to rethink whether that is a reliable referenced
13 test method, due to the problems that they're
14 seeing and the anomalies in the results.

15 Q. But it's correct that PM and PM10 test
16 emission limits have been set using this test for
17 years, correct?

18 A. They have, and that's one of the
19 problems.

20 Q. Notwithstanding these problems, it has
21 not precluded BACT analysis for PM or PM10; is
22 that correct?

23 A. That's true, although I think that
24 that's part of EPA's reason for telling states
25 they don't have to establish condensible PM10 or

1 PM2.5 emission limits right now.

2 Q. It's generally the case, is it not, that
3 a test method or test methods are selected when a
4 facility is receiving its operating permit; is
5 that correct?

6 A. A good permit is going to specify the
7 limit, and then they're going to specify how
8 compliance with that limit is to be determined,
9 and that's usually by either a referenced test
10 method or by a continuous monitor, which is
11 calibrated using the referenced test method.

12 Q. Just to clarify with respect to the
13 dates as to when these test methods that you agree
14 can legally be used -- that in fact EPA would
15 encourage people to use, I believe was your
16 testimony -- I would like refer you to one last
17 document. That is Federal Register document,
18 2005, Tab L. Go to Page 66043.

19 A. Okay.

20 Q. Would you agree on that page that EPA
21 had concluded as of that time that the concerns
22 evidenced in the Seitz memo had largely been
23 resolved?

24 A. Could you --

25 Q. That's on the third column under the

1 heading "Background." I'm referring to the
2 language that begins "Also" mid paragraph.
3 Section 164(a)(4) requires BACT for each pollutant
4 subject to EPA regulation. If you would like to
5 continue reading the next two sentences beginning,
6 "The 1997 guidance."

7 A. "The 1997 guidance stated that sources
8 would be allowed to use implementation of a PM10
9 program as a surrogate for meeting PM2.5 NSR
10 requirements until certain difficulties were
11 resolved, primarily the lack of necessary tools to
12 calculate the emissions of PM2.5 and related
13 reprecursors, the lack of adequate modeling
14 techniques to project ambient impacts, and a lack
15 of PM2.5 monitoring sites. As discussed in this
16 preamble, these difficulties have been resolved in
17 most respects, and where they have not been, the
18 proposal contains adequate provisions to account
19 for it. These issues will be finally resolved by
20 the agency upon promulgation of these proposed
21 revisions."

22 Q. Thank you. At that time, EPA believed
23 that it had enough information to propose
24 implementation of rules; is that correct?

25 MR. REICH: Object.

1 MS. DILLEN: I'll withdraw the question.

2 I have no further questions.

3 CHAIRMAN RUSSELL: Redirect.

4 MR. REICH: None for me.

5 CHAIRMAN RUSSELL: David.

6 MR. RUSOFF: The Department doesn't have
7 any questions.

8 CHAIRMAN RUSSELL: I guess it's time for
9 the Board.

10

11 EXAMINATION

12 BY CHAIRMAN RUSSELL:

13 Q. This whole concept of -- when you
14 mentioned -- I think you mentioned you had
15 conducted six or seven BACT analyses. Was that in
16 your regulatory capacity, and is that really a
17 BACT analysis review?

18 A. The ones that I've supervised and
19 basically been involved in have been as a
20 consultant. There are two kinds of permit
21 applications that we help applicants with, one is
22 for states where they have to have a professional
23 engineering seal or license, and obviously I've
24 supervised under that.

25 Q. So you were actually overseeing a true

1 BACT analysis?

2 A. Yes.

3 Q. Did you ever review when you were a
4 regulator? Do you ever review a BACT analysis?

5 A. Oh, yes.

6 Q. I'm sure I know the answer to this
7 question. Do you advocate the use of top down
8 BACT?

9 A. Yes.

10 Q. In all situations?

11 A. I think that would depend on what
12 alternative approach was being suggested.

13 Q. No, I'm talking about the process.

14 A. The process itself?

15 Q. Yes.

16 A. What I meant was if there was an
17 alternative process that might be better -- I
18 can't envision one of course. But the reason EPA
19 went -- we as EPA, when I was there, went to the
20 top down approach was that it provided much more
21 information to the regulator about the best
22 control technologies. When we were doing what was
23 called the bottom up approach, many times the
24 applicant never got up to the best technologies,
25 so the regulator was stuck with either accepting

1 where the applicant had stopped, or having to
2 gather all the information themselves, which was a
3 terrible resource burden.

4 Q. Apparently the state of Utah doesn't
5 have a primacy when it comes to issuing permits?

6 A. Not in some cases.

7 Q. That's enough. So do you believe the
8 EPA conducted a complete top down BACT on the
9 Deserit permit?

10 A. Again, I more skimmed that to see what
11 was going on in there than actually studied it in
12 detail, but it looked like it was a pretty good
13 analysis to me.

14 Q. Does "pretty good" equate to "complete"?

15 A. Yes. When I say pretty good, I mean it
16 looks like it's complete, and it looks like they
17 covered a lot of the bases, or all the bases.

18 Q. Do you think the 2005 CFR that we've
19 cited quite a bit, was that specific for source
20 testing?

21 A. The November 1, 2005?

22 Q. Yes.

23 A. It was a proposal, and they said upon
24 promulgation that they'll have all their issues
25 resolved, but that's never been promulgated yet.

1 We're still waiting, for example, for the ten ton
2 per year significance level for PM2.5 to be
3 promulgated as an actual significance level. So
4 there is a lot still to be done.

5 Q. This issue with wet ESP's and when you
6 do a BACT on it -- I think you mentioned this, but
7 just for clarification -- things like dewatering
8 of wet sludge would be considered in a BACT
9 analysis as an economic impact?

10 A. It could be an economic impact; it could
11 also be an environmental impact if there are
12 disposal problems, or if you're basically
13 transferring some problems from air to water.

14 Q. I think this question was asked, maybe
15 just in a different way. If you don't do a BACT
16 on condensibles, would your PM emissions be
17 higher?

18 A. You mean the total PM emissions? For a
19 power plant, I guess you're -- coal fired power
20 plant is what you're asking.

21 Q. I'm asking for a power plant.

22 A. It's hard to answer as a yes or no,
23 because there is issues of double counting,
24 because SO2 and NOx are not only precursors for
25 the PM2.5, but they're considered contributing to

1 condensibles as well. And also whenever you do a
2 sulphuric acid mist analysis separately, which is
3 a separated regulated pollutant, you're looking at
4 another one of the condensible components.

5 So do you have it pretty fully covered
6 without looking to condensibles separately? I
7 think to pretty great extent. But I'd really have
8 to think about it before I'd know for sure if you
9 really have already done the equivalent of that in
10 your other BACT analyses for condensibles.

11 Q. In first step of BACT -- I'm going to
12 ask the question. Do you know if Montana does a
13 complete BACT analysis?

14 A. The one that I reviewed for this
15 particular permit, again, looked very good to me.
16 When I teach the course, and I teach effective
17 permit writing and New Source Review, I do get the
18 opportunity to see various states permit
19 write-ups, and BACT analyses, and permit
20 conditions; and there are a lot of them that have
21 very severe problems. Montana is one of the best
22 states.

23 Q. And I love working with them, too. The
24 Deserit permit actually was issued after the
25 Highwood permit?

1 A. I believe that it was, although
2 ironically they mentioned the Highwood permit when
3 they were analyzing for condensibles levels, so
4 evidently the drafts proposals crossed each other.

5 Q. But Deserit actually did a BACT analysis
6 on the control technology using wet ESP?

7 A. Not wet ESP separately, I don't think,
8 but added onto after a fabric filter.

9 Q. That was considered part of their BACT
10 analysis after the Department's?

11 A. Yes. Evidently they have gone a step
12 further now on doing that.

13 Q. So is the issue completeness still?

14 A. No. Well, at least I don't think so,
15 because there is a lot of flux in even Step 1, the
16 listing of these. For example, you could do
17 control after control, you could have three fabric
18 filters in series, and it's technically feasible,
19 but --

20 Q. It's probably not economically --

21 A. Right. It's kind of a waste of
22 resources to do that, because it will be
23 eliminated in the economics, so you don't see
24 that. Have they listed still all available
25 technologies? Well, not if that's what you

1 consider another available technology, but --

2 Q. As a regulator, is it appropriate, when
3 a consultant working for a industry would submit a
4 BACT analysis that is deemed top down BACT, to
5 send it back because there is not enough control
6 options? Some of the control options may be cited
7 in another document, which were readily available,
8 weren't used, and should be applied to that fuel
9 source. Is it appropriate for one to be put back?

10 A. Yes, what an agency can do is one of
11 several things: They can send a letter saying
12 that the application is incomplete; they can not
13 go that far, but just say, "We need additional
14 information before we can proceed any further,"
15 which is a polite way of saying, "It's
16 incomplete;" or that "We just want more
17 information because we're not really sure we trust
18 you on this particular point." There are varying
19 degrees.

20 Q. And the Department did that in this case
21 for some instances?

22 A. Ask for more information? Yes, sir.

23 Q. On that DOE report, if there is a high
24 failure rate of a membrane filter, would you
25 consider that in just in the cost effectiveness

1 analysis then, because you'd be replacing the
2 filter bags all of the time?

3 A. If it survived the technically and
4 feasible decision in Step 2, a membrane filter,
5 yes, you would consider that.

6 Q. You mentioned a test method, I think it
7 was in your deposition, that you termed "the
8 dilution method" -- Is that 39?

9 A. Yes.

10 Q. -- was reliable. Is that synonymous
11 with "generally accepted" or "regulatorily
12 adopted"?

13 A. I don't think so. I think I'm using the
14 term "reliable" in the sense that you aren't going
15 to get anomalies when you do that, and you can
16 compare it through different sources, at least of
17 the same source category, like coal fired
18 facilities.

19 Q. Is top down BACT required?

20 A. No. It's highly encouraged by EPA and
21 the Environmental Appeals Board, which will, even
22 for SIP approved states like Montana, EPA has the
23 ability to evaluate the operating permit, Title 5
24 operating permit, and revisit the NSR issues. So
25 they can get to your state decision any way they

1 wish to, and they say, "You're not required to use
2 top down," but in determining whether you did an
3 adequate analysis, BACT analysis, they will be
4 comparing what you did to the top down approach.

5 Q. Has there ever been a instance where EPA
6 has come in and challenged a Title 5 permit based
7 on the fact that the top down BACT wasn't
8 employed?

9 A. Yes. Well, the top down BACT was not
10 used? Not on that basis, but on the basis that
11 the BACT analysis was inadequate, yes.

12 CHAIRMAN RUSSELL: I'm done. Anyone
13 else?

14

15 EXAMINATION

16 BY MR. MIRES:

17 Q. By chance, are you familiar with SME and
18 DEQ's factual contention sheet that was handed out
19 yesterday? Have you seen that?

20 A. I did not see that, no, sir.

21 Q. There is a No. 26 really it's under the
22 SME's area, and it reads something like this:
23 "Because not all PM10 emissions from a power plant
24 are PM2.5. Counting all PM10 as PM2.5 in a
25 modeling analysis for compliance with the NAAQS

1 over-estimates PM2.5 emissions." That's left me a
2 little bit somewhat confused. I'm trying to
3 figure out how that is a possibility.

4 CHAIRMAN RUSSELL: Did you want to
5 actually read it or --

6 THE WITNESS: I think I've got the gist
7 of that.

8 MR. REICH: (Provides document) I'd
9 like you to read it.

10 Q. (By Mr. Mires) I'm hoping you can kind
11 of explain that to me, please. No. 26.

12 A. Okay. I had developed a diagram for
13 other purposes that I think would explain this
14 very clearly, but that's not been introduced into
15 the exhibits.

16 Basically what that's saying is that in
17 terms of direct emissions, direct PM2.5 emissions,
18 that is split up by EPA into two parts:
19 Filterable and condensible. When you compare that
20 to PM10, the condensible is exactly the same. If
21 you had a bar chart, and this was condensibles,
22 exactly the same amount of material under the
23 PM2.5 condensibles and PM10 condensibles.

24 The filterable portion, if this was the
25 filterable portion, so that the two together made

1 up the total PM2.5 direct, and we're looking at
2 the filterable portion, and let's say the PM2.5
3 direct is this much -- (indicating) -- the PM2.5
4 filterable, and let's just say that PM10
5 filterable is this much.

6 So what you have basically is that if
7 you look at PM10 filterable plus condensible
8 total, that's always going to be at least equal to
9 PM2.5. If all of the particles are PM2.5 or less,
10 then PM10 and PM2.5 direct emissions are equal.
11 If there are larger particles than 2.5 microns,
12 then the PM10 filterable is going to be larger
13 than PM2.5 filterable, condensible exactly the
14 same; but the total will be higher, the PM10 total
15 will be higher than the PM2.5.

16 So if you put more emissions into a
17 model, more grams per second emissions, then
18 you're going to get higher concentrations, which
19 is conservative, because you're doing PM10
20 emissions instead of just the PM2.5 portion.

21 Q. I think I understand.

22 A. This is confusing stuff.

23 MR. REICH: Mr. Chair, I do have his
24 demonstrative exhibit, which we didn't put in, if
25 you'd like to have it to distribute it to the

1 Board, we can do that.

2 MS. DILLEN: I would like renew my
3 objection. What we're contesting here is the BACT
4 analysis, not the demonstration of compliance with
5 the NAAQS and the modeling, which what that goes
6 to.

7 CHAIRMAN RUSSELL: All right. With that
8 let's just -- Larry, anything else?

9 MR. MIRES: No.

10

11 EXAMINATION

12 BY MR. MARBLE:

13 Q. Well, we've had heard testimony that the
14 PM2.5 particles are mainly what passes through
15 from particles of PM10, and how devastating they
16 are health wise in and EPA stuff. And even
17 cutting out small percentages of them by weight
18 will reduce health issues, deaths, and so on, and
19 that EPA stuff.

20 And so it kind of bothers me that we're
21 still relying on a surrogate method established by
22 EPA ten years ago, and we're just not looking at
23 least trying and doing some PM2.5 BACTs. And I
24 thought EPA kind of had language encouraging
25 states to go ahead and try and develop something,

1 but we're just saying, "We're not going to do
2 anything except surrogate, because that's all we
3 want to do, and that's all we have to do."

4 And would it be wrong for the Department
5 to go ahead and do a 2.5 BACT, not on the
6 surrogate method, but looking at filterables?
7 Wouldn't that be good policy if we're trying to
8 really save the health of the people that are
9 going in the area of this plant?

10 A. I guess this is kind of a three part
11 answer, and I'll try to keep it very brief, sir,
12 for you.

13 I mentioned early that the health
14 aspects of this are covered by the impact
15 analyses; and we are admittedly relying on EPA's
16 data and the National Ambient Air Quality Standard
17 that they established as a level below which human
18 health is not impacted adversely. So you are
19 protecting public health as long as the National
20 Ambient Air Quality Standard is not being
21 exceeded, which I think the agency has made sure
22 will not happen.

23 The second part about whether you could
24 go ahead -- wouldn't be it a good idea to go ahead
25 and do a PM2.5 analysis, since that is the way

1 EPA's heading, and that's their focus for fine
2 particulate, I would agree that as soon as the
3 tools become available, that that would be very a
4 good step to take, that you wouldn't necessarily
5 have to wait for EPA to say, "Okay. Now we're
6 going to force you to do so."

7 But EPA has said in some of these
8 Federal Register notices that by 2011, they expect
9 all of the states to begin or to have begun to
10 establish limits, emissions inventories,
11 attainment plans, maintenance plans, and all of
12 their air management based on PM2.5, and complying
13 with and maintaining compliance with the National
14 Ambient Air Quality Standards. So in about three
15 years that's all going to happen anyway, unless
16 somehow EPA delays everything further. That's
17 what I read in the Federal Register, is that's
18 their mandate to do that.

19 If we had the tools available, we could
20 jump ahead on that, but I think I've probably made
21 the point so many times you're probably sick of
22 hearing me say it, but I just don't think the
23 tools are available yet.

24 EPA is a big organization, with people
25 devoted specifically to test methods, to

1 developing the emission factors, to developing the
2 policies on all of this, and you're biting off a
3 very large chunk if you start down the road on
4 PM2.5 for New Source Review before all the pieces
5 are in place.

6 They've only proposed the significance
7 levels, the increments, and everything else, and
8 that makes very difficult to switch over to it.
9 I've seen states push ahead of EPA before, and get
10 caught having used a lot of resources that have
11 suddenly become worthless, because EPA then later
12 came out with a policy that just negated their
13 efforts, and now they have to switch over to the
14 route EPA has decided they're going to have to
15 take.

16 So if you believe that the public health
17 is being protected through the NAAQS -- we have to
18 give EPA credit. They did develop and focus us on
19 on the PM2.5 NAAQS, and there is no problem with
20 monitoring for PM2.5 NAAQS. Then if I were back
21 trying to run a program, back in the state of
22 Colorado trying to run it, I would definitely want
23 to wait for the tools to become available, given
24 that EPA is allowing me to use PM10 as a surrogate
25 and our PM10 emission factors.

1 Q. This plant is going to be built, and the
2 new standards aren't going to provide the help to
3 make sure it's built properly, the very best that
4 can be done.

5 A. That is correct. Now, if we're talking
6 just filterable, all that 140 or so tons coming
7 out after all of the controls that are mandated to
8 be put on this particular facility, ought to be
9 very fine particles. So if there is any more
10 efficient control technologies on, what they will
11 be controlling will be essentially all PM2.5.

12 So you don't necessarily have to switch
13 over to PM2.5 to get more controls of fine
14 particles. All you have to do is improve the
15 efficiency, or find higher efficiency control
16 technologies that pass the top down BACT test,
17 including the cost effectiveness. So there could
18 be a focus on, or a more intensified focus through
19 the Board on looking to make sure that the highest
20 level, most recent technologies have been
21 evaluated.

22 For example, you could say that -- I
23 never liked doing things retroactively when I was
24 with the agency, but you could say, "From 'X' date
25 forward, we want every BACT analysis to include

1 for filterable PM2.5," and look at membrane
2 filters. As soon as they are proven out to the
3 satisfaction of the people involved, yourselves
4 and the agency, those would start being considered
5 in the BACT analysis. There are things you can do
6 now to -- I'm sorry. I got way off base.

7 Q. Keep going.

8 A. But there are things you could do now.
9 I would just urge you not to do them
10 retroactively, based on my difficulties trying to
11 do anything retroactively while I was at EPA, and
12 the consequences of that.

13 MR. MARBLE: That's all the questions I
14 have.

15 CHAIRMAN RUSSELL: Heidi.

16 MS. KAISER: I don't have any.

17 MR. REICH: Mr. Chair, can I just ask.
18 Gary, do you need a break?

19 CHAIRMAN RUSSELL: Can I just get an
20 idea of -- do you have many questions?

21 MS. SHROPSHIRE: I have a couple.

22

23 EXAMINATION

24 BY MS. SHROPSHIRE:

25 Q. You mentioned that the emission rates

1 were needed, and that without those you can't
2 ensure attainment in the management standards; did
3 I understand that correctly?

4 A. Well, yes. You need the emissions for
5 practically all your air management purposes, but
6 I guess the one we're focused on here is the
7 emission limits. You have to tie emissions limit
8 into a compliance test method, and unless -- as we
9 discussed earlier in my cross-examination -- you
10 had a design standard, or some other standard that
11 didn't require an actual emission testing, you
12 just have to have that part the of compliance
13 methodology.

14 And one of the first problems that we
15 all hit with PM10 was that a lot of emission
16 limits were set with PM10 filterable only, and
17 then when the compliance came around, the
18 requirement was, "Compliance shall be determined
19 by not only capturing the filterable with Method
20 201," but you would also add on the condensibles
21 in Method 202, but the condensibles weren't
22 included in the totals in determining what was a
23 reasonable emission limit. So people were
24 exceeding the emission limit based on the
25 compliance test, which --

1 So they have to be linked together, and
2 it would be very nice to have a method we know
3 we're going to use, and we're getting closer to
4 that.

5 Q. How do you ensure the public health if
6 we don't know how to measure it?

7 A. It's my understanding that the monitors
8 which measure the concentration of PM2.5 and
9 ambient air are pretty solid monitoring
10 technology, because whatever has been formed in
11 the way of fine particulate in the air is caught
12 by that filter, and it shows up on the filter, and
13 so you know what the concentrations are in the air
14 you're breathing at every monitoring station.

15 Q. After it hits the ground?

16 A. After it's submitted to the ambient air.
17 You know what is with the background coming from
18 other states; you know what it is -- that monitor
19 picks up the background plus any other nearby
20 sources.

21 Q. Is it coming out of the stack, if there
22 is an exceedence we can't measure that? It's only
23 -- we can't prevent it, it's only after the fact
24 that we know that we've exceeded it; is that
25 correct?

1 A. That's what the modeling is for in --

2 Q. But in terms of actual measuring, not
3 the modeling, but the actually measurement.

4 A. The modeling is usually conservative and
5 it measures --

6 Q. But I don't want to talk about the
7 modeling. In terms of actually measuring it.

8 A. The emissions out the stack or --

9 Q. (Nods head)

10 A. The amount of particulate coming out of
11 that is going to be -- that you can measure as
12 actual particulate matter is just the filterable
13 portion. You don't know for sure that the
14 condensibles are going to immediately become
15 particulate, and you know for sure that the
16 precursors -- the SO₂, NO_x, VOC, and ammonia --
17 are not immediately going to become precursors.
18 They're going to react in the atmosphere, and
19 eventually they will form, to some extent,
20 particulate, and add to the overall load in the
21 region.

22 Q. So if there was an event where there was
23 exceedence, you wouldn't know about it?

24 A. An exceedance at ambient concentrations?

25 Q. Out of the stack.

1 A. Oh. The concentration out of the stack
2 is pretty concentrated, so that's probably higher
3 than the National Ambient Air Quality Standard,
4 but stacks allow dilution before it hits ground
5 level. So that's why you do the modeling. You
6 estimate what the monitor would see without the
7 source, and then you would estimate what the
8 source adds to that monitor, and see whether the
9 total exceeds the ambient air standard.

10 MR. REICH: Excuse me, if I might. Ms.
11 Shropshire, were you referring to the exceedences
12 of the limits, or exceedence of the National
13 Ambient Air Quality Standards?

14 Q. (By Ms. Shropshire) Well, what I'm
15 trying to get at is: How do you ensure the public
16 health if you can't measure it?

17 A. You can't measure the amount of PM10
18 without a referenced test method -- I'm sorry
19 amount of PM2.5 filterable coming out of the stack
20 without a referenced test method.

21 But what you can do is make assumptions
22 that are conservative. For example, you can
23 measure the amount of PM10 filterable, which is
24 greater than the amount of PM2.5, and use that in
25 your modeling, which the State did. So if that

1 amount of emissions plus background won't cause
2 ground level concentrations that are above the
3 National Air Ambient Air Quality Standard, then
4 it's doubtful that the PM2.5 will, because that's
5 a fraction -- the filterable PM2.5 is a fraction
6 of the filterable PM10. So the ground level
7 concentration will be lower than the model shows.
8 I feel like I'm not answering your question.

9 Q. I guess to finish up, what you're saying
10 is -- Let me go back. What would you typically
11 measure at the stack?

12 A. At the stack? With a reference test
13 methods -- let's say that's a given -- you would
14 be able to measure all of the PM2.5 components.
15 You'd be able to measure the filterable, the
16 condensable, the SO2. There is good methods for
17 SO2, good reference methods. That's one of the
18 precursors. NOx, that's one of the precursors; no
19 problem measuring that. VOC is another one of the
20 precursors; no problem measuring that. Ammonia,
21 another precursor; not much of a problem measuring
22 that.

23 Q. What about sulphuric?

24 A. Sulphuric acid mist? There is
25 referenced test methods for that as well.

1 Q. So for each of the individual
2 condensibles, there are referenced test methods
3 that are acceptable?

4 A. I'm trying to think if there are for all
5 of them. I think there are --

6 Q. At least for the regulated pollutants
7 that we've been talking about, you just mentioned
8 that there are?

9 A. For almost all of the regulated
10 pollutants except possibly PM2.5, there are
11 referenced test methods available. The problem,
12 of course, is that the condensible methodology
13 seems to be picking up these artifacts, which may
14 or may not actually be what EPA intended to
15 comprise condensible emissions. It might be
16 overstating the amount of actual condensible
17 emissions in some cases.

18 Q. Is it reasonable to look at the
19 individual constituents, like sulphuric, HF, and
20 HCL's, and VOC's?

21 A. That was the approach that it looked
22 like the Montana DEQ did try to take to estimate
23 the condensibles, and I think it's a reasonable
24 approach to try to estimate the condensibles.

25 Q. And maybe that's where I was confused,

1 because I am still trying to get my head around
2 measuring those individual condensibles versus SO2
3 and the other small filterable portion. And so
4 was the BACT done for SO2 and filterables for
5 PM2.5 or the condensibles, or was it done for the
6 individual regulated pollutants?

7 A. Maybe that's a better question to Eric

8 Q. If you can answer that. Do you know?

9 A. I know there was a BACT analysis for
10 SO2, so that --

11 Q. Is there a BACT analysis for sulphuric?

12 A. Sulphuric acid mist --

13 MR. RUSOFF: I'd be glad to put Eric
14 back on to answer a question. He would be the
15 best person to answer that question.

16 Q. (By Ms. Shropshire) Let me rephrase the
17 question. If a BACT -- prior to Step 1 in the --
18 whatever that shape is -- applies to each new
19 emission unit for each pollutant subject to PSD
20 review -- let's just use sulphuric acid -- one of
21 pollutants that's subject to BACT review? I guess
22 should there have been a BACT for sulphuric?

23 A. Sulphuric acid mist?

24 Q. Yes.

25 A. If it was emitted in significant

1 quantities. I just don't recall if it was.

2 Q. Would one, if it were emitted in
3 sufficient quantities, do an individual BACT for
4 HF, and an individual BACT for HCL, and an
5 individual BACT for VOC's?

6 A. Let's see. For fluorides, that's one of
7 the regulated NSR pollutants, so yes, there would
8 be a BACT analysis for that. HCL, I don't believe
9 that's a separate regulated NSR pollutant, so I'm
10 not --

11 Q. I think it is.

12 A. It doesn't come to mind. I don't recall
13 on that.

14 Q. I'll move on from there. We were
15 talking about the Btu value for different coal
16 types, and you speculated that the reason that the
17 plants in Pennsylvania and Florida had lower
18 emission rates --

19 A. Parts per million Btu.

20 Q. -- was potentially because they were
21 higher Btu value coals?

22 A. That would be one possible explanation
23 for that. And in fact EPA, again in Deserit,
24 looked at that. They were particularly sensitive
25 to it because Deserit was going to burn what was

1 called waste coal, 50 percent ash, and that's
2 horrible stuff. 6,000 Btu's per pound. That's
3 next to dirt. It's not quite that bad.

4 MR. ROSSBACH: I don't think the people
5 at Northern Rockies are going to be all that
6 happy.

7 Q. (By Ms. Shropshire) It may be
8 inappropriately quoting you, but you were
9 referring to western coal as good stuff. Is that
10 because it's low sulphur?

11 A. The Powder River Basin, yes, that's nice
12 low sulphur coal.

13 Q. So if it has lower sulphur, is it true
14 that it would have lower sulphur emissions?

15 A. Yes.

16 Q. Would it make sense then that it would
17 produce less SO₂ and less sulphuric acid mist?

18 A. Yes, than a higher sulphur coal would.

19 Q. So for a plant like this plant that's
20 burning a low sulphur coal, why would it have
21 higher -- In terms of the sulphuric acid mist that
22 is allowed for this permit, it higher than a lot
23 of the plants that are burning high sulphur coal.
24 Can you explain that?

25 A. Not without more information, I can't.

1 Q. Would it make sense that you would
2 produce less sulphuric acid potentially with low
3 sulphur coal?

4 A. If we're talking uncontrolled emissions,
5 yes. But I think all of these are after controls.

6 Q. So if we looked at the controls being I
7 think -- I can't remember if it was 80 percent or
8 90 percent efficiency, the overall pounds would
9 still be less if we're looking at efficiencies?

10 A. There still are some variables in here
11 that are hard to -- I guess it's not an easy
12 answer without taking a hard look at what the
13 differences are. That is one of the things that
14 an agency certainly has the ability to do and very
15 often does, is to look at other emission limits
16 that have been proposed, and to ask the applicant
17 why they can't reach that same lower level.

18 And it may be one of many reasons. It
19 may be that the facility hasn't been built yet, so
20 you don't know if they're going to meet that; or
21 it might have something to do with the control
22 combination selected.

23 Ironically sometimes a lower
24 concentration of a pollutant in the gas stream
25 means that what you're going to end up emitting is

1 going to be higher because you're going to reject
2 some level of control that would have been cost
3 effective on a higher concentration, but is not
4 cost effective on the lower end of concentration.
5 That's one of the strange things about doing these
6 analyses.

7 Q. In your review of BACTs, would you
8 provide -- or I should say -- would you expect to
9 have a commercial guarantee in order to use that
10 in a BACT analysis for an emission rate or an
11 efficiency? Would you expect that to be
12 guaranteed in order to use that in a BACT
13 analysis?

14 A. The need for or comfort with a guarantee
15 depends on whether you're the applicant or the
16 agency. They both probably would like to have the
17 guarantee.

18 What happens in a vendor guarantee is
19 that there are several factors in there. One is
20 that generally a guarantee means that there is a
21 margin of safety in there, which of course a
22 source needs to be able to comply, not only
23 immediately after the equipment is installed, but
24 for the lifetime of the source, forty or fifty
25 years. The vendor guarantee is usually just for

1 immediately after the equipment begins operating.

2 You do the test. If it meets that limit, then

3 that's the end of the guarantee. And so there is

4 a slight problem there.

5 And then there is guarantees that could

6 could so be qualified that they don't really

7 constitute a guarantee at all. For example, I saw

8 one guarantee that said, "This guarantee becomes

9 invalid if there is ever a plant malfunction."

10 That doesn't help you a lot.

11 Q. But if there weren't a guarantee at all,

12 would you use that in a BACT analysis?

13 A. You could with supporting data. If the

14 the vendor just wasn't comfortable with it, but

15 you have test data showing some other facility

16 with that equipment and similar gas stream

17 characteristics has met that, that's a good sign.

18 Q. There was discussion about whether or

19 not there aren't guaranteed emission rates, or if

20 there aren't known emission rates, that you would

21 go with a higher level of technology, and with

22 regards --

23 I'm referring to that Exhibit 1, the

24 BACT process. You said that, "Well, that's not

25 for this. That's for fugitive emissions;" do you

1 recall that?

2 A. The design, the idea of using design,
3 equipment, work practice, operational standards,
4 or combinations of those.

5 We began realizing that the New Source
6 Performance Standards, which of course are
7 nationwide, found a lot of these types of
8 approaches very useful, for example, the design of
9 a degreaser. You can design them so that very
10 little of these fumes get out, and require things
11 like they be covered when you're not putting stuff
12 in or taking it out.

13 Well, there are some circumstances where
14 you can do the same sort of thing for stationary
15 sources for BACT, but if I'm remembering
16 correctly, the original concept of BACT wasn't
17 very specific about us being able to use design
18 standards in other approaches like that.

19 Q. But it's not specifically for fugitive
20 emissions; is that correct?

21 A. Right. It's just whenever there might
22 be a real problem.

23 Q. What's one example.

24 A. With measuring. For example, for
25 particulate matter, there are some particulate

1 monitors that coming along, and becoming
2 available; but for a long time, there was only
3 this very cumbersome and time consuming stack test
4 that is available to determine compliance. So
5 very often, what people would do would be not only
6 have an emission limit, but they would say,
7 "Compliance with this limit shall be determined
8 by," and then they would have things like pressure
9 drop, or inspection and maintenance procedures to
10 ensure that the equipment was operated properly
11 and maintained properly.

12 So same thing with VOC emissions. If
13 it's difficult to test for the VOC's after an
14 incinerator, you can require a certain residence
15 time, which would be part of the design of the
16 unit, and that they maintain a certain minimum
17 temperature in there, so that you can combust the
18 VOC's. So this makes all those approaches
19 available, as well as an emission limit.

20 (Recess taken)

21 CHAIRMAN RUSSELL: We'll resume. I'll
22 remind you that you're still under oath.

23 Q. (By Ms. Shropshire) I guess just a
24 clarification, because I heard you say a couple of
25 times that -- and I'm not sure if I misunderstood

1 -- but you would discount technologies because
2 they wouldn't pass the economic test. It seemed
3 that you were discounting them before you got to
4 Step 4.

5 A. This was kind of a special case of
6 technologies for the same pollutant in a series.
7 EPA generally doesn't ask for or evaluate a whole
8 series, like two or three baghouses in a row for
9 particulate. And I did not mean to imply that I
10 would just look at, say, a wet electrostatic
11 precipitator and dismiss it if that was proposed
12 as the first or only control device for a specific
13 pollutant.

14 What I was trying to say was that if you
15 start proposing a series of control devices for
16 the same pollutant after the first one, it's
17 extremely likely that the second one is not going
18 to be cost effective, and it's almost a certainty
19 that the third one is not going to be cost
20 effective. So why go through an almost endless
21 series of different combinations for the same
22 pollutant?

23 Q. This isn't in the record, but recently
24 I'm aware of -- you're from North Carolina.
25 You're probably aware of Duke Power -- but them

1 actually suggesting of having three technologies
2 linked together, and it seems to me that it's
3 common nowadays, in order for us to protect human
4 health, and to meet the regulations, that we would
5 have linked technologies. So if two things in
6 tandem is the best method, I don't understand how
7 you would throw that out as an economic
8 infeasibility before you get there.

9 A. I think there is kind of a double answer
10 for this, and two parts to an answer. One is that
11 a lot of the combinations I'm seeing are
12 combinations put together to address more than one
13 pollutant, so it complicates the analysis, because
14 you're looking at the capabilities of this
15 combination for more than one pollutant, for
16 example, a dry flue gas scrubber, a flue gas
17 desulphurization unit, where you're injecting
18 something like limestone lime, but then you have
19 actually added particulates, so you have to get
20 that out, and so you have a choice of fabric
21 filter or other device to do that.

22 The two together as a combination have a
23 dual hit on two different pollutants at least,
24 SO₂, and particulate matter. So you've got two
25 devices, yes, but one is in there primarily to

1 reduce SO₂, and the other serves a dual role of
2 not only controlling particulate, but getting that
3 now captured or absorbed SO₂ out of the flue gas.

4 Q. Is there a regulation that says that a
5 tandem scenario where you might have a baghouse
6 and then a wet ESP are two different technologies,
7 or could those be considered one technology? Do
8 you understand my question? Could you consider
9 the two things in tandem as one technology? Is
10 there any guidance that says how to address that?

11 A. The only guidance that you'd have would
12 be to take -- No, there really isn't much on that.
13 If I understand what you're getting at, the second
14 part of my response would be that the one area
15 where EPA does have some policy on a series of
16 controls in any classic example that they use is
17 not particulate matter, but it's VOC, volatile
18 organic compounds control. But it's applied in
19 different ways.

20 For example, they will say that if you
21 have a surface coating operation, that you should,
22 as an agency and as an applicant, look at not only
23 the individual components that I'm going to
24 mention, but a combination of those.

25 For example, an example that they give

1 is: Look to see if you can prevent some of the
2 VOC emissions to begin with by using a lower VOC
3 solid coating.

4 Q. I don't mean to cut you off, but I think
5 you've answered my question. The last question
6 is: If we can't measure the emission rates, are
7 there examples of analysis ever being done by an
8 impact? Because if you can measure the ambient
9 deposition, could you use that as a surrogate for
10 existing plants?

11 A. You mean use an ambient air monitor?

12 Q. For existing plants as an estimate of
13 condensible emissions.

14 A. The problem is figuring out what portion
15 of what that monitor captures is from the plants
16 nearby, and what part has been brought in as
17 background on the wind from other sources.

18 Q. I guess the same argument can be made
19 after the fact.

20 A. Yes. There is a difference. There is a
21 difference, though, that the primary
22 responsibility for making sure that the ambient
23 concentrations are not made unhealthful by, say,
24 an exceedence of the National Ambient Air Quality
25 Standards is the agencies. They're not to issue

1 permits that allow that to happen, based on the
2 modeling. If it does happen, they are to develop
3 an attainment plan to get that area back to
4 healthy levels.

5 And they then do all of this by focusing
6 on the sources that are causing the problem, but
7 it's very seldom that a single source is very
8 obviously the only contributor to a particular
9 ambient problem. There are a few cases where it's
10 almost all from one source, but not many.

11 MS. SHROPSHIRE: Thank you.

12

13 EXAMINATION

14 BY MR. ROSSBACH:

15 Q. I just only real area that -- I think
16 everything has been fairly well covered. The area
17 that I want to have a little bit of a follow up on
18 is this series of -- or linked technologies, and
19 the policies behind them, economic analysis.

20 Why don't you go to Exhibit 7, and this
21 helps me maybe by putting it in context. Exhibit
22 7 Page 40 is the little matrix, technical
23 feasibility analysis for condensible PM10.

24 A. Is this back in the analysis?

25 Q. In the analysis section.

1 A. Okay. At the bottom of Page 40?

2 Q. Yes. And I'm only using this as an
3 example, and I know you're somewhat familiar with
4 it, but you may not be totally familiar with this.

5 But I read this, then, as the various
6 technologies listed for controlling condensible
7 PM10. Aren't each one of these essentially linked
8 technologies? Isn't that the same kind of thing
9 we're talking about here, a linked technology,
10 linked control technologies?

11 A. There is for the condensibles? Yes.

12 Q. We started with a dry FGD, and then we
13 go to an FFB in one, and other one -- this is --
14 Essentially we're laying out, we're doing Step 1
15 of looking at technologies, and here we're using a
16 set of linked technologies, isn't that true, in
17 order to get a condensible PM10 control; isn't
18 that true?

19 A. Yes. The dry FGD by itself isn't going
20 to get the condensibles out of the gas stream.

21 Q. Just adding to it. But if you look at
22 -- okay. But when you look at this, you have to
23 add both of those components of the process
24 together to get a cost of the process, don't you?

25 A. Right. But in these cases, it's

1 essential.

2 Q. Right. This is where I come from a
3 fundamental, philosophical point of view. It
4 seems to me that if we're trying to get to a
5 result, which is eliminating "X" percentage of
6 PM2.5, that from a philosophical point of view,
7 and a policy point of view, why would you, or has
8 -- maybe you can answer this. Has EPA ever even
9 talked about this as saying, "If we have to do a
10 linked technology, why don't we consider the cost
11 of both of them as one?," because that's
12 essentially what we're doing here.

13 I understand that in this case, it's not
14 the same, because one, you're really not
15 eliminating the sulphur by the FGD part of it.
16 The ESP or the FFB is essential as a second
17 element of that. But it stills seems to me that
18 -- why isn't it the same thing, that if you have
19 -- if you want to get to, say, condensible PM10
20 control efficiency of 95 percent, for example, or
21 98 percent, and there was somebody who had
22 developed a linked bag, a membrane bag, wet ESP,
23 sort of integrated the two together, why couldn't
24 that be argued as a linked technology, essentially
25 a linked technology that should be costed as one?

1 In other words, whereas the second half of it --

2 Because you're never going to get a
3 linked technology that ever passes BACT. It's
4 inherently impossible to do, as you said, because
5 the second one is getting such a small
6 differential that it will never be by itself cost
7 effective.

8 But what I'm trying to say is from
9 philosophical point of view, why don't we try to
10 do them together, and cost them both, and say,
11 "Okay. We've got these linked technologies, and
12 we're getting 95 percent instead of 80 percent, or
13 85 percent, or some of these. Why can't cost them
14 together rather than costing them separately?"

15 A. Well, if we --

16 Q. This isn't a good example. I
17 understand that. You heard Mr. Taylor talk about
18 linking the two. If somebody -- This is what I'm
19 saying. If some manufacturer came and said,
20 "Well, I've got membrane bag, or I've got a
21 membrane bag, and if I just tie it together with a
22 wet ESP on the back end," why can't I sell that a
23 single technology that would then have to be
24 costed as one to get 95 percent -- you know,
25 higher level of efficiency?

1 Because otherwise nobody -- There is
2 going to be no incentive to try to design a better
3 system. No one will ever want to do a linked
4 system. Do you see what I'm saying?

5 A. Yes, although I guess I should note two
6 things: One is that in the only permit analysis
7 that EPA has ever done, on about 20,000 permits
8 issued in 1985, they found that 85 percent of the
9 limits that went beyond BACT went there because
10 the source had to go lower to fit in and not
11 violate an increment or the National Ambient Air
12 Quality Standards.

13 So psychologically you shift the
14 responsibility for meeting a tighter limit and
15 finding a better control to the source. When that
16 happens, they want it to work. It will work
17 horribly to -- horrible hours to try and make this
18 thing work, and then when they and if they do
19 solve all of the problems, that technology is
20 sitting there for you to pluck for your next BACT
21 analysis.

22 So the BACT spreads nationwide very
23 rapidly once it's proven, and so that to me has
24 always been -- as EPA, and during my years as a
25 consultant -- where the real break throughs tend

1 to occur, is when the source really needs it, and
2 wants it, and pushes for it, and then it's
3 responsible for it.

4 Q. But that's in order to meet an emission
5 standard, back-in standard, rather than a control
6 standard?

7 A. It's to have an acceptable impact, so it
8 will get a permit. Otherwise they won't get a
9 permit.

10 Q. Right. But it just seems to me that if
11 you would increase -- You're not EPA. If you were
12 EPA, this is what I'd be asking you: Why didn't
13 you consider letting an agency -- because Eric
14 here would never be able to propose as a
15 technology a linked system, because under the way
16 the economics is done now, the second half of the
17 link will never be cost effective.

18 But what I'm saying is that if Eric was
19 allowed to say to SME, "Well, I consider the
20 technology that you use, quote, the technology is
21 a linked system, and that I'm going to do the
22 analysis on how much I'm going to get out totally,
23 and lump the two together." And if you lump the
24 two technologies together, and you get their
25 efficiency to the level that maybe you do, it

1 could be cost effective, if you're allowed to link
2 it. That's all I'm saying.

3 It seems to me that it takes away some
4 of the tools of the agency not to be able to do a
5 BACT, if you wanted to, because the company will
6 always come back and say, "Well, the second one is
7 never cost effective," because it can't be if you
8 can't link the two together."

9 A. And I think EPA has thought of this
10 concept. I remember thinking about this while I
11 was at EPA. But the problem with that -- In terms
12 of terminology, I'd like to say that these, that
13 you were using as an example, are dependent on
14 each other, but if we talk about --

15 Q. I have no confusion about that.

16 A. So if we can talk about, say, a fabric
17 filter followed by an ESP -- And obviously you're
18 already into the concept that if you analyze ESP
19 separately, it's probably not going to be cost
20 effective, so why don't we lump them together.

21 I think EPA doesn't want that done
22 because what it does is it does lower the cost
23 effectiveness number for ESP, but unfortunately,
24 it has the opposite effect on the total cost
25 effectiveness for the two systems together, and

1 might push it over a threshold, so that nothing is
2 put on.

3 Q. I understand. But then the next one
4 down from the top would be just a baghouse by
5 itself, and that would presumably pass cost
6 effectiveness. The other side of the equation,
7 though, is looking at the benefits, and I don't
8 know how you -- I don't do the economic side of
9 this obviously.

10 But it seems to me that if you made the
11 cost or the benefit of reducing it from 90
12 percent, or increasing the efficiency from 90
13 percent to 95 percent, if you valued highly that
14 extra 5 percent increase, particularly with PM2.5,
15 where small weight volumes mean lots and lots of
16 particles, then it would seem like you're just
17 changing the numbers.

18 I just don't like the way the number
19 crunchers are dealing with this, and it seems to
20 be affecting the ability of an agency to really
21 maximize the benefit to the community by saying to
22 them, "I'm sorry. You can't link them," because
23 the first one is going to be -- the second one is
24 going to be so cost ineffective, you'll never be
25 able to add the second one on, even though you

1 might get a 5 percent improvement.

2 That 5 percent improvement might be 50
3 tons of PM2.5, which in my view, a ton of -- this
4 stuff, we're talking about a ton a day of PM2.5
5 coming out of the stack.

6 I want to hear what -- That's all I'm
7 saying. It's Just a comment, really not a
8 question. After hearing all of this stuff, this
9 is where I come out on this.

10 A. Congress made it clear that the states
11 have the ability to weigh those three factors --
12 the energy, environmental, and economic factors --
13 any way they wish to, as long it isn't unlawful,
14 or arbitrary, or capricious, I would assume under
15 the state laws or federal laws.

16 The EPA in more recent years, in the
17 last twenty years or so, has come back and kind of
18 tried to push states toward a more nationwide
19 approach. But we contend in the BACT course that
20 we teach, and I personally believe, that this cuts
21 both ways, but that states have the ability to put
22 extra emphasis on concerns of public health, or on
23 the beauty of the area, or anything they wish to
24 like that, and use higher cost effectiveness
25 numbers in an area of the state.

1 They also have the ability to say, "We
2 want economic development in this area," or "We
3 want citizens to have this," and to go with a
4 lower threshold. I think it's other way around.

5 But in other words, they can adjust the
6 weight of this. They don't have even have to do
7 it consistently across the state, as long as
8 they're consistent and rational in the way that
9 they apply it. So one area of the state could
10 have cost effectiveness numbers of \$50 a ton,
11 another could have \$500,000 a ton. It's up to
12 them to make that decision, and that's part of
13 what an agency with its reviewing board, and
14 legislative mandate, and so on can decide to do.

15 MR. ROSSBACH: Thank you. I appreciate
16 that very much.

17

18 FURTHER EXAMINATION

19 BY MS. SHROPSHIRE:

20 Q. So in light of -- We do an individual
21 BACT for sulphuric, and we do an individual BACT
22 for VOC's, etc., and we come up with an individual
23 technology for each one of those constituents.
24 If we were to do a BACT for PM2.5, which would
25 encompass all those things --

1 A. PM2.5 condensibles, I assume? Okay.

2 Q. -- one could argue that if you did a
3 BACT for PM2.5 using each of those individual
4 components, in order to capture all of them, you
5 would have to have a linked technology, and so
6 doing individual ones may not be the same as doing
7 a BACT for PM2.5 consolidated. You might have to
8 have a linked technology if you included each of
9 those constituents as a PM2.5 BACT; is that true?

10 A. I'd have to think this through to be
11 sure. But it seems like if you aggregate all
12 these together into just all condensibles, if a
13 single control device or a combination can collect
14 all of those different individual components, then
15 the cost of that control device stays the same,
16 but the total tons you collect is great than any
17 individual component. So the tons are higher.
18 You're dividing those into the same cost. So the
19 cost effectiveness number decreases.

20 Q. But let's say, for example, within
21 PM2.5, we've got filterables and condensibles.

22 A. Okay.

23 Q. And a baghouse works better for
24 filterable, and another technology, for example,
25 doesn't, and the best technology was a linked

1 system.

2 A. For filterables only?

3 Q. For total PM2.5. It would make sense to
4 have a linked system as the best technology for
5 all of the constituents?

6 A. Well, usually it's two different control
7 devices, of course, for collecting gases, what are
8 essentially gases in the exhaust stream, versus
9 particles in the gas stream.

10 Q. That's exactly what I'm saying.

11 A. So you're saying: Could you combine
12 those two together, those two control devices
13 together, and just divide that by the total tons
14 of PM2.5 direct that's collected?

15 Q. What I'm saying is that if you've got
16 multiple things -- if you are required to regulate
17 PM2.5, and therefore do a BACT on PM2.5, you may
18 have to look at a linked system in order to
19 accomplish that?

20 A. Well, you probably are going to have to
21 look at at least two different control devices,
22 because one will collect the gaseous and one will
23 collect the filterable material. Whether you'd be
24 better off combining the two together, and taking
25 the total tons collected, I'm not sure how that

1 would work out.

2 MS. SHROPSHIRE: Thank you.

3 CHAIRMAN RUSSELL: All right. The

4 witness is excused. Thank you very much.

5 (Witness excused)

6 MS. SHROPSHIRE: One quick question.

7 JOSEPH LIEROW,

8 called as a witness herein, having been previously

9 sworn, was examined and testified as follows:

10

11 CHAIRMAN RUSSELL: You're still under

12 oath.

13

14 RE-EXAMINATION

15 BY MS. SHROPSHIRE:

16 Q. So the question is: Were you provided

17 with a commercial guarantee from a qualified

18 supplier for the control technologies that you

19 used in the BACT?

20 A. We were supplied with values that in

21 this case Alstom would be willing to guarantee,

22 and the actual guarantees come later down the road

23 when you actually sign a contract to purchase

24 their equipment. Does that answer your question?

25 Q. I think so. How do you certify --

1 Because Mr. Merchant said that what you give them
2 is certified. And how do you certify something
3 without having that guarantee? That's what I
4 don't understand.

5 A. In every air quality application, big or
6 small, major or minor, there is a form in the back
7 of the application that the facility operator, or
8 whoever is in charge, vice president, president
9 type of a person, signs a truth in accuracy
10 statement that all of the data provided is to the
11 best of their knowledge true and accurate.

12 And to go on a step further than that,
13 the information that's provided by vendors in
14 general, or in this case by the manufacturer of
15 the boiler, they will tell you what they're
16 willing to guarantee, and you'll have a pretty
17 good idea of that up front in the whole process
18 when it starts.

19 Q. Do you recall what that rate was that
20 they were willing to guarantee?

21 A. You need -- To what pollutant?

22 Q. In terms of the PM, the .015 or I guess
23 is the filterable.

24 A. The PM filterable. Yes. The original
25 indication that they would guarantee was .015, and

1 you have to look at -- I'm not saying you have to
2 -- but when we go through this process, the person
3 who is trying to build a facility wants to make
4 sure that when they are up and operating, they're
5 going to meet these emission limits; and when you
6 don't meet these emission limits, you will get
7 fines, and there'll be a lot of bad publicity, as
8 we are well aware of over the last year or two
9 when other power plants have come on line.

10 So as the builder of the plant, you want
11 to make sure that you can meet these limits, not
12 just one time, but all of the time. So you have
13 to build some safety into that. A lot of times
14 the emission rates are built on some testing and
15 there is some --

16 Q. I'm sorry. I just want to -- Are they
17 willing to guarantee .012?

18 A. Yes. Well, if I step through the
19 process a little bit, I'll get to that. So when
20 they decide that they're going to guarantee a
21 number, there is typically some analysis that goes
22 into it.

23 Sometimes it can be where they have some
24 stack test data -- I don't know what went into
25 their guarantee, but this can happen, typically

1 can happen -- is you'll have a set of data, and
2 you take a statistical analysis, and say what's
3 the 99 percent confidence level that will meet
4 this, typical statistics; and then that's that
5 number they would feel comfortable, a typical
6 vendor may feel comfortable guaranteeing. And so
7 in this case, they felt comfortable at .015.

8 And when you first receive these numbers
9 -- because you have receive them up from in the
10 project. They don't come at the end of the
11 project. You need to have these numbers at the
12 beginning to start building emission inventories,
13 to start looking at what programs are applicable
14 to your facility.

15 So it's not a number that shows up at
16 the end of the ball game. You have an idea. And
17 as person who is working in this field, you have
18 an idea -- Does it past lath test to begin with,
19 and at .015, it passes that test, because there is
20 lots of facilities, and recent facilities in
21 Montana that just were permitted at .015. So we
22 haven't ran through the BACT process yet to see if
23 that number is going to fall out or not, or if
24 they need to -- That's a whole process that will
25 take place as you move through the whole

1 permitting process that in this case takes years
2 to go through.

3 And then when we submitted it -- we went
4 through the process, the top down BACT process,
5 and for justification, as a vendor guarantee that
6 they felt very comfortable with, that .015 was
7 considered BACT.

8 And you have to think of the historical
9 persontive of all that, because at that time,
10 Montana DEQ was starting to permit these other
11 facilities at .012, so there was a transitional
12 time when BACT was starting to shift. Even
13 through it's a case-by-case, you still have an
14 idea of where numbers are going to fall out when
15 you start the whole process. And in the end, the
16 case-by-case analysis, that's where you fall out,
17 in the very end.

18 So when the State came back and said,
19 "We don't feel your justification at .015 is good
20 enough," or whatever they told us at the time, and
21 said, "You need more justification," and so we
22 would go back, and you talk to the vendors, and
23 they ultimately were willing to guarantee .012.
24 But it takes away a margin of safety, and you have
25 to weigh that against future compliance.

1 So it's kind of a Catch-22 at times
2 where you can ratchet yourself down so far, but
3 then you're at extreme risk of operational
4 violations. So that's part of BACT, is being able
5 to achieve that number throughout the lifetime of
6 that facility. Does that help answer some of the
7 questions?

8 Q. Did they guarantee a condensible limit
9 rate?

10 A. They guaranteed the total PM10 limit or
11 -- I don't know if they guaranteed -- I don't know
12 the contract because I'm not part of the
13 contracting of the project. But as far as a
14 permitting analysis goes, they're willing to
15 guarantee the .026 total PM10 value.

16 Q. But not for specifically condensibles?

17 A. Well, the test itself is a combination
18 of filterable and condensible. So when you
19 actually do the test, you'll report the value as
20 of one value.

21 MS. SHROPSHIRE: Thank you.

22

23 RE-EXAMINATION

24 BY MR. ROSSBACH:

25 Q. This memorandum, this email thing -- I

1 don't remember what the number is -- an email from
2 Joe Leirow to Mark Payne, and back and forth.

3 MS. DILLEN: I think it's Exhibit A.

4 MR. McCARTER: Is that the material for
5 the question?

6 MR. ROSSBACH: Yes. I just want to --
7 since he's here, I would like to -- This is
8 Exhibit A?

9 MR. REICH: MEIC Exhibit A.

10 Q. (By Mr. Rossbach) Mr. Leirow, could you
11 look at this. Do you have a copy of it in front
12 of you?

13 A. Yes, I do.

14 Q. And the way it looks like it started
15 with a email from you to Mr. Payne; is that
16 correct?

17 A. Yes, it is.

18 Q. The first question is: "During our
19 meeting yesterday with MDEQ," who did you meet
20 with, just for the record?

21 A. Off the top of my mind, definitely Eric
22 was there; probably Dave Klemp; John Cofield;
23 Diane Lorentsen. I remember they were there. The
24 typical crew.

25 Q. Were you there? Was there anybody with

1 you on behalf of Bison or SME?

2 A. Mr. Jeff Chaffee was also in attendance.

3 Q. It says, "They requested we provide a
4 PM2.5 modeling analysis with the remodel, although
5 they are not requiring it, but only recommending
6 it." Then you go on, and as I understand it, make
7 a request to Mr. Payne that he talk to the
8 baghouse manufacturers about providing PM2.5
9 emission rates; is that correct? Is that your --

10 A. Yes. I'm requesting that he look at
11 PM2.5 emission rates for the material handling
12 baghouses, yes.

13 Q. But you said, "not the main boiler
14 baghouses"? In other words --

15 A. Yes.

16 Q. At least at that point; is that right?

17 A. Right.

18 Q. And so am I correct in understanding
19 that you could have also asked then or at some
20 later point for PM2.5 emission rates for the main
21 boiler baghouse, too, for the manufacturers?

22 A. Yes.

23 Q. So that's the kind of information that
24 the baghouse manufacturers would be able to
25 provide to you; is that correct?

1 A. Not necessarily. And I could explain a
2 little bit behind this request, if you don't mind.

3 Q. I'm just interested in what the
4 manufacturers can do or cannot do. That's all I'm
5 interested in.

6 A. At this point, this is far along in the
7 process when we've already settled on emission
8 rates, and we're just going in to shift the plant
9 for remodel, and DEQ said, "Take a look at PM2.5
10 modeling." So I'm going in with the thought that
11 I want to show some kind of analysis that shows
12 that we're protecting human health and environment
13 by meeting the National Ambient Air Quality
14 Standards, because the new standard had just been
15 implemented, and went from 60 micrograms to 35.

16 So the main boiler, I'm not really
17 concerned with that at this point. I'm not
18 sure --

19 Q. That's not the question. My question
20 is: You asked Mr. Payne -- Mr. Payne was the
21 person that had contact with the baghouse
22 manufacturer?

23 A. Yes.

24 Q. So the only question I have for you,
25 since Mr. Payne isn't here, is: Is it your

1 understanding then that somebody who is a baghouse
2 manufacturer has statistics or data on the
3 emission rates for their products, in other words,
4 a set of specifications as to how much PM2.5, how
5 it's going to work, how efficient it is; is that
6 correct? That's information that a manufacturer
7 can provide or may be able to provide?

8 A. May be able to provide. That's the main
9 question. Yes, they may have been able to provide
10 that. We had a good indication of PM2.5 emissions
11 with the condensibles portion, so that's why I'm
12 not asking for that.

13 Q. I understand that. But it's something
14 that is available to you as sort of the agent for
15 SME to dealing with the manufacturers. The
16 manufacturers have specifications for this type of
17 stuff; is that correct?

18 A. You have to remember that PM2.5, there
19 is not a lot of information, as we've said
20 numerous times. So they may or may not have had
21 that at that time. I don't know if I specifically
22 asked. I didn't specifically. They may have, but
23 I don't know.

24 Q. But as part of the market, since 2.5 is
25 becoming the standard, it certainly makes sense

1 that a manufacturer who is trying to sell these
2 products is going to be testing them to be able to
3 represent to people like you and SME about what
4 they can produce, what kind of efficiency they can
5 produce; isn't that correct?

6 A. That's correct logic, and I'm sure the
7 awareness level, especially with hearings like
8 this, that goes up, and up, and up, as time goes
9 on. At this point in time, it's not as -- I
10 shouldn't say concern -- but that information just
11 isn't typically available.

12 Q. Do you know whether Mr. Payne ever got
13 you the information you requested?

14 A. No. He basically, in an email later on,
15 said that -- he did respond back to me on the
16 material handling baghouses, and said that
17 basically they didn't have a lot of data -- I
18 don't have that in front of me -- but just used
19 the emission rate that was given without any real
20 support for a different number.

21 Q. The emission rate that was given by
22 whom?

23 A. The material handling baghouses for coal
24 handling have an emission rate of .005 grains per
25 dry center cubic feet, and my recollection was

1 that Mark Payne in another email a few days later
2 said that -- my understanding was without a lot of
3 additional information, they weren't able to
4 provide us a different value that would be lower
5 than the .005.

6 Q. Who gave you that .005? Who gave you
7 that? Was that the manufacturer?

8 A. Yes, that was a number from a baghouse
9 manufacturer of material handling baghouses.

10 Q. So they did give you that information?

11 A. Yes, for PM10 value.

12 Q. That's a PM10?

13 A. That's a PM10 value, and they said,
14 "Short of any -- since we don't really have
15 anything --" I'm surmising this -- "then just go
16 ahead and use that number." So in essence, use
17 PM10 as a surrogate.

18 MR. ROSSBACH: Thank you.

19 MS. DILLEN: Mr. Rossbach, we do have
20 the follow up email, and I don't think it's quite
21 as Mr. Lierow has represented. I don't know if
22 you're interested in seeing it or not.

23 MR. REICH: Is this a --

24 MR. ROSSBACH: I saw one that had these
25 values in it; is that --

1 MS. DILLEN: It's one that was contested
2 on relevance grounds, and so it hadn't been
3 included in your --

4 MR. REICH: I'm going to object because
5 you've rested.

6 CHAIRMAN RUSSELL: I think witness --

7 THE WITNESS: That's my interpretation
8 of the email. I'm not repeating it verbatim, but
9 that was my interpretation of reading the email at
10 the time.

11 CHAIRMAN RUSSELL: Thank you. The
12 witness is excused.

13 (Witness excused)

14 CHAIRMAN RUSSELL: We'll take a break
15 and get ready for closing arguments, or
16 statements, or whatever you call it.

17 (Recess taken)

18 CHAIRMAN RUSSELL: Let go ahead and wrap
19 this up. It was suggested to me and confirmed by
20 another board member, and then I asked, that
21 closing arguments will be submitted in writing.
22 We will have no oral argument. I asked Laurie
23 about it. Next week would be the earliest of
24 getting a transcript, but you do have the record.
25 You do have the record, and you have everything

1 that's been admitted. So hopefully we can go with
2 that. It might be pushing it to do it. We could
3 double back and ask Laurie through Katherine when
4 the transcript will be available.

5 MS. DILLEN: I don't think we can do it
6 without the transcript. That's really the key to
7 what evidence has been produced.

8 CHAIRMAN RUSSELL: So as soon as we can
9 get those, I think we're going to have to wait to
10 schedule --

11 MS. DILLEN: My point is only that aside
12 from the exhibits that you have, a lot of the
13 testimony that we rely on has come in orally, so
14 we would need to reference it in that brief.

15 MR. ROSSBACH: Well, I guess my only
16 point is that if we were doing closings verbally,
17 they wouldn't have to have the transcript now
18 anyway. I know it's a convenience to have it, and
19 that's fine, but I don't think we should delay,
20 because I know we want to move forward on getting
21 it. I don't want to delay a long time for filing
22 these papers. That's all.

23 CHAIRMAN RUSSELL: But if a draft is
24 available, we can still, working through
25 Katherine, that we could set a conference. You

1 could get your arguments done, and get those
2 submitted, and then hopefully within the next -- I
3 think, Abigail, you leave in two weeks, right?

4 MS. DILLEN: I leave on the 12th, yes.
5 I agree with Mr. Rossbach that we could do it
6 right now. I just don't want to have arguments
7 with Counsel as to our contentions as to what --
8 if I say, "Mr. McCutchen agreed that X,Y,Z," and
9 then there is a fight about it, and they have
10 briefing about it. I don't want that to happen.

11 CHAIRMAN RUSSELL: I think that even if
12 we have to have a draft in the record, we should
13 be able to put a closing together that states your
14 case.

15 MS. DILLEN: I'm happy to rely on the
16 draft.

17 MR. MARBLE: So we will have a telephone
18 meeting?

19 CHAIRMAN RUSSELL: We will have a
20 telephone meeting, and we will deliberate at that
21 point.

22 MR. MARBLE: There will be no statements
23 or closing statements? We'll deliberate?

24 CHAIRMAN RUSSELL: We will have a
25 written closing statement available before

1 deliberation. We'll deliberate, and hopefully
2 give Katherine an opportunity. And don't lose
3 this document that was filed yesterday, because it
4 has the potential of a lot of work that Katherine
5 is going to need for findings when we make our
6 decision. So keep this document. It's important.

7 MR. MIRES: What is your projection on
8 when you're anticipating the telephone conference?

9 CHAIRMAN RUSSELL: Prior to the 12th.
10 Probably that week.

11 MR. MIRES: Just a point of interest.
12 I'm in D.C. the whole week of the 4th through the
13 8th.

14 CHAIRMAN RUSSELL: So provider to the
15 12th and after the 8th.

16 MR. MIRES: The 8th being a Friday, and
17 Monday the 11th.

18 MS. DILLEN: If the parties were able to
19 keep their closing shorter, should we just wrap
20 this up sooner?

21 CHAIRMAN RUSSELL: I'd just as soon as
22 not now.

23 MR. ROSSBACH: It will be a better
24 quality for us.

25 CHAIRMAN RUSSELL: I think it will, too.

1 MR. REICH: So do you know when? We're
2 talking about two weeks max? Do you have some
3 idea of when you want the written submissions?

4 MR. LIVERS: Mr. Chairman, next week is
5 the week of January 28th through February 1st.
6 The following is February 4th through the 8th.

7 CHAIRMAN RUSSELL: Then Monday is 11th.

8 MR. LIVERS: Yes.

9 CHAIRMAN RUSSELL: How does the 11th
10 look?

11 MR. LIVERS: I'll be out of town. I'm
12 not pivotal.

13 CHAIRMAN RUSSELL: So let's plan on the
14 11th. Go back and check. Let's just plan on our
15 telephone conference on the 11th. Let's plan on a
16 morning meeting. I think it's going to take us at
17 least two hours.

18 MS. DILLEN: I am so sorry. I'm
19 concerned that I may have to consult my schedule.
20 I'm arriving in India I think on the 12th, which
21 I'm realizing probably means with a time change,
22 that I'm leaving on the 11th. And I wasn't
23 expecting this, and I don't have my calendar here.
24 But I could certainly get back to you within hours
25 over email.

1 CHAIRMAN RUSSELL: Larry, you said you
2 were going to be gone the 4th through 8th?

3 MR. MIRES: Yes. I'm in the air most of
4 the 8th, and the 4th, and I have almost back to
5 back meetings in D.C. from --

6 CHAIRMAN RUSSELL: So your flight leaves
7 early the 8th?

8 MR. MIRES: Yes.

9 MR. LIVERS: Is late next week is out of
10 the question?

11 CHAIRMAN RUSSELL: Whatever happens out
12 there, the closing doesn't matter now, because we
13 still have to have a telephone conference. So
14 that's off the table. It's the telephone
15 conference.

16 MR. MIRES: Is like next Friday the
17 first, is that's too early for everybody? The
18 31st, first?

19 MR. SKUNKCAP: Friday is not good for
20 me. I'll be at the same meeting as Larry.

21 MR. MIRES: That's pushing it.

22 CHAIRMAN RUSSELL: All of your time in
23 D.C., there is probably not a time when we could
24 have a telephone conference?

25 MR. MIRES: If you get something set up

1 -- if you set it up for maybe Tuesday the 5th, it
2 will be ugly, but early in the morning.

3 MR. LIVERS: If I may, are your evenings
4 booked as well? Given the time change, that's
5 another option. If there happens to be an evening
6 that you might available. I'm not trying to put
7 the pressure on you. But 6:00 for you would be
8 4:00 here, for example.

9 MR. MIRES: Right now it's --
10 (indicating) I would say the best date is going
11 to be Tuesday the 5th sometime before noon.

12 CHAIRMAN RUSSELL: Noon our time?

13 MR. MIRES: Yes. Let's go sometime
14 before 10:00, so if we did it, it would be your
15 time 8:00 to 10:00; 10:00 to 12:00 in D.C.

16 MS. SHROPSHIRE: I can after 10:15 I
17 can. I can't do it from 9:00 to 10:00.

18 MR. LIVERS: Mr. Chairman, could I put
19 on table for discussion. How critical is it that
20 the attorneys for the parties are available during
21 Board deliberations?

22 CHAIRMAN RUSSELL: I'm not sure it's
23 super critical if we're not going to let them say
24 anything, but I'm sure they're going to want to
25 listen.

1 MR. LIVERS: That gives us time later in
2 February.

3 MR. REICH: From our perspective, the
4 only problem with the delay is the delay is
5 dollars, delay is problems to the project.

6 MS. DILLEN: I may be available on
7 eleventh. I'll know momentarily.

8 MR. RUSOFF: Mr. Chairman, could I just
9 point out that the Court Reporter is still on the
10 record. I'm not sure whether you intended this to
11 be on the record, but I think she's having
12 difficulty when people are consulting.

13 CHAIRMAN RUSSELL: Just say there was
14 discussion regarding dates and times.

15 Here is what we're gonig to do. On the
16 record. The parties are going to submit written
17 closing arguments, and we are going to set a
18 telephonic date within the next two weeks. That's
19 on the record. The rest of it I think we can just
20 continue to try to figure out a time.

21 Since we are in session, is there anyone
22 in the audience that would like to speak to the
23 Board on any Board related matters that aren't
24 associated with what we did today?

25 (No response)

1 CHAIRMAN RUSSELL: Seeing none, I'll
2 entertain a motion to adjourn.

3 MR. REICH: Just one matter. You
4 haven't told us when you wanted our briefs.

5 CHAIRMAN RUSSELL: As soon as possible,
6 but two days before the 8th. That morning.

7 MS. ORR: Can I add something? It would
8 really be beneficial for you to refer to the
9 record. If you wish to -- If you're picking
10 something up from the record, if you can give a
11 reference page.

12 MR. REICH: By record, you're talking
13 about the exhibits?

14 MS. ORR: The transcript. When is the
15 due date?

16 CHAIRMAN RUSSELL: It would be the close
17 of business on the 5th. Because of transmittal
18 and everything else, I think the close of business
19 on the 5th would be the best.

20 MR. REICH: Would you like those
21 electronic, hard copy, both?

22 MR. ROSSBACH: PDF.

23 CHAIRMAN RUSSELL: Electronic and PDF.

24 MS. BREWER: Electric, and if you are
25 willing to send me a Word version, that is the

1 best. I can PDF them. It makes for a smaller
2 file.

3 CHAIRMAN RUSSELL: Before we do close,
4 thank you very much. All of the parties have done
5 a good job addressing the Board, keeping the
6 matter at hand at hand, and I appreciate that. We
7 didn't drift a lot, and I think it made for a
8 productive hearing. So I appreciate everything
9 you did for us. And hopefully we'll get it closed
10 out, and we'll be able to make a decision.

11 So with that, do I have a motion to
12 adjourn?

13 MR. ROSSBACH: So moved.

14 CHAIRMAN RUSSELL: Second.

15 MR. SKUNKCAP: Second.

16 CHAIRMAN RUSSELL: All those in favor,
17 signify by saying aye

18 (Response).

19 CHAIRMAN RUSSELL: Opposed.

20 (No response)

21 CHAIRMAN RUSSELL: Thank you.

22 (The proceedings were concluded

23 at 6:30 p.m.)

24 * * * * *

25

1 C E R T I F I C A T E

2 STATE OF MONTANA)

3 : SS.

4 COUNTY OF LEWIS & CLARK)

5 I, LAURIE CRUTCHER, RPR, Court Reporter,
6 Notary Public in and for the County of Lewis &
7 Clark, State of Montana, do hereby certify:

8 That the proceedings were taken before me at
9 the time and place herein named; that the
10 proceedings were reported by me in shorthand and
11 transcribed using computer-aided transcription,
12 and that the foregoing -[]- pages contain a true
13 record of the Volume III of the proceedings to the
14 best of my ability.

15 IN WITNESS WHEREOF, I have hereunto set my
16 hand and affixed my notarial seal
17 this day of , 2008.

18

19 LAURIE CRUTCHER, RPR

20 Court Reporter - Notary Public

21 My commission expires

22 March 9, 2008.

23

24

25